

Surrey Uni Doing the maths on virus transmission

23 December 2024



How prepared are we for another pandemic? Mathematical insights pinpoint lessons on airborne viral transmission

Half a decade on from the start of the COVID-19 pandemic, a study by the **University of Surrey** highlights the significant impact of combined public health measures in reducing airborne viral transmission. High-quality face masks were shown to reduce transmission risk by ninefold, while doubling indoor air ventilation cut the risk by nearly a third, providing valuable insights to support future prevention strategies for respiratory diseases.

In 2020, the world came to a near standstill as rising COVID-19 cases prompted unprecedented lockdowns, travel restrictions and widespread public health measures. The World Health Organization estimates that more than three million deaths were directly attributed to the virus during the first year of the outbreak, underscoring the devastating toll of the pandemic on global health and economies.

To better understand the dynamics of airborne transmission and inform future preparations, **Dr Richard Sear**, Associate Professor at Surrey's School of Mathematics and Physics, explored how the virus spreads during contact and the role of protective measures in reducing risk.

Dr Sear said:

"I've tried to measure how effective strategies, such as mask-wearing, are for the transmission of airborne viruses. This is both for any future pandemic, and for seasonal flu. I combined modelling with data from the UK's NHS COVID-19 app. While these estimates are highly approximate, they provide guidance on the value of measures such as face masks, social distancing and improved indoor air quality, which could be tested in the future."

Factors such as viral load, ventilation and individual susceptibility are likely to influence a significant variability in COVID-19 transmission rates, with some contacts posing a much higher risk than others. These findings highlight the importance of addressing environmental and behavioural factors in public health strategies.

In terms of personal protective equipment (PPE), high-quality face masks, such as N95/FFP2, were found to be particularly effective in reducing transmission risk, decreasing the effective reproduction number for COVID-19 transmission by a factor of approximately nine when worn by the entire UK population. Even individual use of N95 masks can lower transmission risk by threefold, no matter the duration of contact, whereas surgical and cloth masks are much less effective.

Ventilation also plays a critical role in controlling airborne transmission, as viral particles linger in poorly ventilated spaces, compounded by individual behaviours, such as close-contact interactions, speaking or coughing. By doubling the air turnover rate indoors, whether that's through open windows and doors or increasing speed on air conditioning systems, transmission can be reduced by as much as 30%. Complementing good ventilation with physical distancing further minimises the risk.

Dr Sear added:

"The COVID-19 pandemic was terrible for many of us, which is why it's important that we learn from our experiences. It also demonstrated how quickly we can develop and roll out vaccines when faced with a global health crisis. Moving forward, both we as individuals and our leaders have an opportunity to apply these lessons to better control respiratory diseases - not only to head off any future pandemics, but to also manage seasonal diseases such as flu and RSV."

The study has been published in Physical Review E.

Watching out for tomorrow's film talent in Epsom and Ewell

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Creative Media students from North East Surrey College of Technology (Nescot) were joined by their tutors, family and friends for the premiere of their short film, 'The Watching' which was screened at Epsom Picturehouse last week.

'The Watching' was filmed on location in the South Downs in November by Nescot's Level 4 and HND Creative Media students as part of their domestic filming project. Written by and starring former student, Charlie McCarthy, 'The Watching', is a psychological drama, exploring themes of identity, state control and the human cost of forgetting, set against the desolate beauty of an isolated coastline.

Louise Gaskin, Head of Curriculum for Creative Industries at Nescot said, "A huge well done to our cast and crew. We are so proud of their efforts and hard work on this project which has resulted in, I think, one of the best films we've made as a department. Thank you to Epsom Picturehouse and Satisfied Eye International Film Festival for supporting our students, we were thrilled to be able to showcase our students' film on the big screen."

Abigail Partington-Moran, Creative Media tutor at Nescot added, "The students have worked really hard on this filming project and enjoyed themselves too. They've taken the early starts, late nights, cold weather and countless unit moves all in their stride. The project has given them the real-world experience of working on set, and alongside the technical film-making skills, they've also learnt team work, problem-solving and time management skills."

After the film screening, key cast and crew members involved in the filming took to the stage for a Q&A session with Creative Media tutor demonstrator, Alex Marshall. They included, former student, Charlie McCarthy, Script Writer and Actor, and Sam Gower, Actor; HND student, Hannah Lealan, Producer; Level 4 student Frankie Hamley and HND student Nathan Elford, Directors and Level 4 student, Amani McKenzie, Script Supervisor.

Former student Charlie was part of Nescot's Gold Medal winning Creative Media team at WorldSkills UK 2023. He said his inspiration for the script was the filming location, "I liked the idea of writing something satirical with reference to the beach. Everyone involved was brilliant and so dedicated all of the time. We had lots of fun making this film and I do hope audiences enjoy it."

HND student, Nathan, who had the role of Director along with Level 4 student Frankie said, "We all worked really well together, there were no arguments which was great! Both Frankie and I collaborated to bring together the visual aspects of the film. The whole production was very professional. The experience has given me an idea of the job role I'd like to get into."

"Even though it was stressful at times, it was good stress and taught us how to problem-solve. We have learnt a lot from this whole production. It has made us ready for the film-making industry," added Frankie.

HND student, Hannah who had the role of Producer said, "We were essentially two different classes, working together. We turned a challenge from never having worked with someone before into an opportunity to develop, work and learn from each other. We had lots of fun on set between takes which made the experience enjoyable."

Level 4 student Amani explained that as part of his role as Script Supervisor, he had to ensure there was continuity through the whole production from props to the actor's lines, to make sure everything ran smoothly. "It's been an amazing experience and has prepared us for handling industry-related situations. We are ready!" he said.

Nescot Creative Media alumnus and industry professional, Luke James was present for the screening. Addressing the students, he reminisced about working on a similar filming project nine years ago when he was a student at Nescot and offered them key advice. He said, "Filmmaking is a labour of love and there are endless opportunities in this industry. The opportunity to make something like this film is just so valuable, and you may not feel it now, but you should all be extremely proud of yourselves."

'The Watching' has been entered into the Student Short (UK) category for the 2025 Satisfied Eye International Film Festival

Nescot's Level 4 and HND Creative Media students on location for the filming of 'The Watching'. Credit NESCOT

Plant-based meat alternatives might be depressing

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There is mounting evidence suggesting that ultra-processed foods (UPF) are bad for our health, but if you stick to a vegetarian diet, is that still the case? Plant-based meat alternatives (PBMA) are considered to be ultra-processed foods and may be associated with similar harms.

In the first study of its kind, published in Food Frontiers, researchers from the University of Surrey found that vegetarians who consumed PBMA had a 42% increased risk of depression compared to vegetarians who refrained from PBMA.

The study analysed data from the UK Biobank and found no notable differences in intake of sodium, free sugar, total sugar, or saturated fatty acids between those vegetarians who ate PBMA and those who did not.

The researchers did find, however, that those who eat PBMA had higher blood pressure and C-reactive protein (CRP) levels, a marker of inflammation, and lower levels of apolipoprotein A, a protein associated with HDL, a “good” cholesterol; PBMA consumption was, however, also linked to a reduced risk of irritable bowel syndrome (IBS) by 40%.

Professor Nophar Geifman, from the School of Health Sciences at the University of Surrey and senior author of the study, said:

“The overall findings are reassuring, suggesting that plant-based meat alternatives may be a safe option when they are part of an overall balanced diet. However, the potential link between these types of food, inflammation and depression warrants further investigation.”

The study presented some limitations due to the data collected, which was predominantly from a white population in the UK, and dietary information only being gathered at the beginning of the study, not accounting for potential changes over time.

Professor Anthony Whetton, co-author of the study from the School of Veterinary Medicine at the University of Surrey, said:

“Ultra-processed plant-based meat alternatives can be a useful way for people to transition to a vegetarian diet effectively, and that helps with sustainable agricultural practices. Further research, including longitudinal studies and trials with more diverse populations, is necessary to confirm these findings and the relationship between vegetarian foods and mood.”

Surrey first in image AI

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Surrey announces world’s first AI model for near-instant image creation on consumer-grade hardware

A groundbreaking AI model that creates images as the user types, using only modest and affordable hardware, has been announced by the Surrey Institute for People-Centred Artificial Intelligence (PAI) at the University of Surrey.

The model, NitroFusion, represents a world first and has been made open source by its developers - SketchX, a lab within PAI - a move that fundamentally transforms access to AI-enabled image creation models for creative professionals.

Professor Yi-Zhe SonG, Director of SketchX and Co-Director of PAI, said:

“NitroFusion represents a paradigm shift in making AI accessible to everyone, eliminating the need for large compute resources and the long waiting times between prompt and result that are common with most image generation platforms.”

Typically, similar technology is available only to corporate giants with vast computing resources. However, NitroFusion runs on a single consumer-grade graphics card - marking a decisive step forward in bringing advanced AI capabilities to individual creators, small studios, and educational institutions. The almost instant creation of images allows rapid artistic iterations and greater control over the generated imagery.

Dar-Yen Chen, the PhD researcher who helped to develop the project at PAI, said:

“NitroFusion leverages a novel dynamic adversarial framework that works like a panel of specialised art critics, each evaluating different aspects of the generated image to ensure high quality in a single step. The system’s flexible architecture allows users to optionally use between one to four refinement steps, providing direct control over the balance between generation speed and image quality.”

Professor SonG added:

“With NitroFusion, we’re not just releasing another image generation model – we’re pioneering an entirely new approach which democratises AI interaction.

“Following our DemoFusion release last year, which provided a new way to upscale AI-generated images, this innovation further establishes our position at the forefront of making powerful AI technology accessible to all.”

This breakthrough delivers multiple leaps for the users and industry:

- Instant image generation that responds as users type – a first in the field – enabling rapid iteration, greater control and better experimentation
- Improved sustainability through greatly reduced energy consumption
- Consumer-grade affordable hardware requirements (e.g. a single high-performance GPU) that mean individuals and small studios can create imagery affordably
- Open-source availability enables global innovation, adaptation and variations
- No cloud dependencies or subscription fees.

Professor Adrian Hilton, Director of the Institute for People-Centred AI at the University of Surrey, said:

“We believe we’re the first in the world to achieve interactive image generation at this scale and efficiency. This opens up access to state-of-the-art AI for image generation and is just the beginning of our commitment to democratising creative AI tools. Our Institute will continue to develop open-source, groundbreaking technologies that put professional-grade AI capabilities into the hands of creators everywhere.

“We’re particularly proud of the great work that our SketchX Lab, creating new concepts and advancing the science of generative AI. Our research is focused on ensuring that the future of creative AI technology is inclusive, responsible and accessible to all, and we’re keen to continue to work with organisations that share this ethos.”

The technology is available immediately through <https://chendaryen.github.io/NitroFusion.github.io/>, with comprehensive documentation and community support resources.

Call to address mental health of health workers

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Only a system-wide overhaul of the NHS that invests in staff wellbeing can address the psychological ill-health crisis amongst healthcare workers, according to research led by the University of Surrey in partnership with the University of Exeter. The research, which is funded by the National Institute for Health and Care Research (NIHR), focussed on nurses, midwives and paramedics who are disproportionately affected by psychological ill-health, which leads to significant consequences for both individual wellbeing and patient care.

The study found that whilst high-pressure environments, heavy workloads, and chronic staff shortages are key drivers of stress and anxiety among healthcare professionals, it is the features of the work environment, such as lone working and career stage, such as being newly qualified, that can be key. The NHS staff survey reports that almost half of all NHS staff reported feeling unwell due to work-related stress in the past year (47%), with many experiencing unrealistic time pressures and inadequate staffing levels.

The researchers identified several key findings, including:

- An underlying blame culture undermines staff psychological wellness by creating a toxic work environment.
- A prevalent “serve and sacrifice” culture prioritises institutional needs over individual wellbeing.

- Healthcare professionals often experience moral distress and emotional exhaustion due to the tension between upholding professional values and the realities of clinical practice.
- A more comprehensive approach is needed to address the cumulative effects of workplace stressors rather than only focus on individual-level strategies and acute stressors.
- Developing effective psychological wellbeing interventions for diverse healthcare workers is complex.

Professor Jill Maben OBE, Professor of Health Services Research and Nursing at the University of Surrey, said:

“ By addressing these systemic issues, the NHS will not only improve the psychological health of its workforce, but will also enhance the quality of patient care and reduce costs associated with turnover and absenteeism”.

A series of recommendations emerged, aiming to improve staff wellbeing and create a healthier workplace culture. First and foremost, prioritising staff wellbeing is crucial. This involves addressing essential needs such as providing access to food and hydration, break rooms, staff parking (including disabled parking), and financial security.

A holistic and collaborative approach to staff wellbeing is also recommended. By focusing on both prevention and intervention, organisations can adopt a systems-level strategy to promote and protect wellbeing effectively.

Other key recommendations include:

- Normalising and proactively managing psychological ill-health: Recognising that psychological stress and burnout are common challenges in healthcare is essential.
- Giving equal consideration to psychological safety alongside physical safety within the healthcare workplace.
- Developing compassionate leaders for the future: Investing in leadership development fosters a compassionate and supportive work environment.
- Fostering a learning culture and encouraging open communication: Creating a psychologically safe environment where staff feel empowered to speak without fear of retribution is vital.

Professor Cath Taylor, Professor of Healthcare Workforce Organisation and Wellbeing, said:

“We have produced a comprehensive guide to assist NHS leaders and staff in implementing our recommendations. This resource provides practical advice on how to address poor psychological wellbeing in nurses, midwives and paramedics to create a more supportive healthcare system, allowing staff to thrive and deliver excellent care for patients”.

For more information, and to view the guide, visit: <https://workforceresearchsurrey.health/projects-resources/cup2/>

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Epsom Teen Selected as Duke of Edinburgh's Award Youth Ambassador

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A young woman from Epsom is amplifying young people's voices after being chosen as a UK Youth Ambassador for The Duke of Edinburgh's Award (DofE).

Kalina Hristova, 17, joins a select group of 35 DofE Award holders aged 16-24 from across the UK. These Youth Ambassadors will advocate for young people by sharing their insights on key issues, speaking at events, meeting decision-makers in Parliament, and contributing to the DofE charity's direction.

Originally from Bulgaria, Kalina has lived in the UK for ten years and credits the DofE with helping her socially. She began her DofE journey at the Silver level when she joined a new school, finding it a great way to meet people outside her classes.

Kalina said:

“Starting a new school in Year 10 is quite daunting, so I joined DofE to make new friends and learn new skills. I’m glad I did, as I’ve met some of my best friends through DofE, and I’ve been able to dedicate my time to something I want to achieve.”

For her Volunteering section, Kalina coached netball, leading sessions for younger students, running drills, and planning fun games. This not only improved the students’ skills but also enhanced Kalina’s communication abilities.

For her Physical section, she focused on fitness, tracking her progress through her Apple Watch. An avid sportswoman, she joined a gym to start weightlifting. *“Sometimes I found it a bit intimidating, as it can be a male-dominated environment, but the more I progressed, the easier it became,”* Kalina added.

She also participated in the London Vitality 10K race, raising awareness and funds for the DofE. *“I would never have run a distance like this if not for the DofE. I was not a runner before, but with all the work I put in for my Physical section, I knew I could do it,”* she said.

As part of her Gold Volunteering, Kalina became her school’s DofE ambassador, supporting Bronze and Silver participants, organising expeditions, and teaching skills like map reading and food planning.

For her Residential section, Kalina attended a three-week summer programme in Pennsylvania called Leadership in the Business World, which inspired her to consider studying Economics or Finance at university. *“DofE has been so much fun, and it’s way more than just an Expedition. I applied to be a Youth Ambassador to apply the skills I’ve learned through DofE to the real world,”* she explained.

Empowering Young Leaders

Funded by The Gosling Foundation, the Youth Ambassador programme places young people at the heart of shaping the DofE’s work. Ambassadors have met Ministers, spoken at high-profile events, represented the DofE at international forums, and influenced key decisions across the charity.

Ashley Williams, UK Youth Engagement Manager at The Duke of Edinburgh’s Award, said: *“Kalina is one of many young people who have achieved incredible things through their DofE. As a charity, we’re determined to put young people at the heart of everything we do and give them opportunities to make a positive impact on the issues they care about.”*

“It’s not an easy time to be a young person, with the after-effects of the pandemic and the cost-of-living crisis. Opportunities like the DofE allow young people to have fun, grow in resilience and self-belief, and develop vital skills they can’t always get in the classroom.”

Young people aged 14-24 who participate in the DofE choose activities in four sections: Physical, Skills, Volunteering, and Expedition. Along the way, they gain confidence, discover new talents, and work toward a highly respected award.

X-Ray vision wins Surrey Uni “spin-off” a prize

23 December 2024



Silveray, the digital X-ray film company and Surrey spinout, wins coveted Institute of Physics award with a new approach to X-ray imaging

Innovation in X-ray technology could be key to detecting cancer more accurately than ever before, says the CEO of a startup that has won this year’s Institute for Physics Business Startup Award.

Silveray, a spinout from the University of Surrey, has invented a flexible, reusable, and cost-effective Digital X-ray Film (DXF) that is transforming industrial radiography for weld inspection. In the long term, the ground-breaking technology offers the promise of more accurate diagnostic X-ray imaging at lower radiation doses for earlier and more accurate tumour detection, leading to better patient outcomes.

Silveray’s nanoparticle-based material for X-ray imaging is made of a semiconductor ink that is coated on to a flexible electronic backplane with pixels that captures the X-ray image. Unlike the current X-ray market status quo, Silveray’s technology enables enhancements in image quality on a physically flexible medium at a cost-effective price point.

Dan Cathie, CEO and Co-Founder of Silveray, said:

“The X-ray imaging sector has seen relatively few revolutionary innovations since the advent of digital imaging. Our vision at Silveray is to develop technology that disrupts this way of thinking by creating financially sustainable, reusable, physically flexible Digital X-ray Film (DXF).”

“We know there is more to be done but this award from the Institute of Physics is a recognition of the valuable potential of

our technology for the industrial non-destructive test (NDT) market. Furthermore, our vision is to become game changers for mammography and other areas of X-ray imaging with our high-sensitivity, high-resolution, Digital X-ray Film invention.

“This award comes as fantastic recognition for the team at Silveray following the close of our recent funding round, led by Northern Gritstone.”

Silveray was founded in 2018 by Professor Ravi Silva, Director of the Advanced Technology Institute (ATI) at the University of Surrey. Since then, Silveray and the ATI have painstakingly worked on the technology that incorporates high-Z elements (heavy atoms known for their ability to absorb X-rays) into semiconductor polymer materials, creating flexible X-ray detectors that are both sensitive and adaptable to curved surfaces.

Professor Silva said:

“Traditional indirect conversion X-ray detectors are stiff, costly, and inherently force a trade-off between image quality, speed, and dose, but our innovation at Silveray changes that.

“Our direct conversion technology is flexible, reusable, and closely mimics human tissue, making it perfect for medical uses like accurate diagnosis for early tumour detection. Because it doesn’t require complicated processing, this could make a real difference in improving medical X-ray imaging and radiotherapy.”

Image: the Silveray team with the IoP award.

Surrey strategist secures stardom in Space Science

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Renowned astrophysicist Professor Adam Amara, Director of Space Strategy and Head of the School of Mathematics and Physics at the University of Surrey, has been appointed as the UK Space Agency’s (UKSA) new Chief Scientist.

While remaining at Surrey, Professor Amara will split his time between his space strategy role at the University and his new role at the UKSA, in which he’ll offer independent expert advice and strategic guidance on all scientific areas within the Agency’s remit.

Professor Amara said of his appointment:

“I am honoured to be appointed as the UK Space Agency’s Chief Scientist during such an ambitious and exciting time for the UK’s space industry and its contributions to the UK economy. My role is to work with the space community across academia, government, and industry to ensure the UK seizes the opportunities ahead.”

Professor Amara will now oversee a broad range of disciplines, including astronomy, astrophysics, planetary science, solar physics, space weather, lunar and Mars exploration, International Space Station experiments, and Earth and climate science. In addition to building relationships across the UK space community, Professor Amara will also be working closely with global agencies, including the European Space Agency (ESA) and NASA, to promote the UK’s space priorities.

Professor Tim Dunne, Provost and Senior Vice-President at the University of Surrey, said:

“I want to congratulate Adam on this exciting opportunity to lead the UK Space Agency’s scientific work. His appointment highlights the University of Surrey’s lasting strength and rich heritage in space sciences, centred on the discoveries, innovation and industrial impact of the Surrey Space Centre.”

The Surrey Space Centre, founded in 1979 by Professor Sir Martin Sweeting, pioneered small satellite technology, which is credited with changing the economics of space and laid the foundations for much of today’s space industry. The Surrey Space Centre led to the creation of the hugely successful spin-out company Surrey Satellite Technology Ltd (SSTL) in 1985.

As we look to the future, Surrey has ambitious plans for Professor Amara and his outstanding team of researchers and educators, to once again propel the institution to the frontier of space science.

Ashtead school opens hearts to child refugees

23 December 2024



Christmas cheer filled the halls of City of London Freeman’s School (CLFS) as over 90 guests, pupils, staff, and friends from the Refugee Buddy Club gathered for a heartwarming Seasonal Celebration dinner. The event, held in partnership with the Epsom & Ewell Refugee Network, celebrated friendship and marked the spirit of the festive season.

This joyful evening also highlighted the success of the Refugee Buddy Club, which has been running at CLFS for two years. The club provides an invaluable space for refugee children and their families, offering not only practical support but also vital friendship and connection. Students at CLFS are paired with refugee children as “buddies,” helping them with homework, fostering confidence, and most importantly, creating genuine bonds.

“Many refugee children face challenges making friends at school and often experience isolation and bullying,” said Jo Sherring of Epsom & Ewell Refugee Network. “The Buddy Club is a safe and welcoming environment where these young people can form meaningful relationships with peers who are eager to support them. The impact is profound.”

The Refugee Buddy Club also runs English classes for parents, making it a family-centered initiative. Transportation is provided to ensure all families can attend, reflecting the school’s deep commitment to inclusivity. The programme supports families from Afghanistan, Ukraine, Syria, and other conflict-affected countries.

The Seasonal Celebration dinner was a true testament to the power of community, showcasing how collective efforts can transform lives. The Epsom & Ewell Refugee Network expressed their gratitude to CLFS for their unwavering dedication to fostering hope and friendship among refugee families.

The real world visits the virtual world at Ewell’s NEScot

23 December 2024



Principals and teachers from across the world visited Nescot (North East Surrey College of Technology) College in Ewell, Surrey last week, to try out its brand-new virtual reality (VR) immersive classroom. Delegates from Brazil to Bulgaria and South Africa to Singapore joined a visit arranged by global education network ORT for a masterclass on artificial intelligence (AI), chatbots, and the use of immersive technology in education.

The Nescot immersive classroom is packed with state-of-the-art technology, including an Igloo (a pod with a 360-degree projection system), immersive room, vehicle simulators, and VR headsets. The international delegates were able to try these out and found themselves virtually transported to different spaces, driving diggers on a construction site, and exploring hazards in a health and safety simulation. Students from across the curriculum at the college use the room to gain skills and experiences they couldn’t easily access elsewhere.

The visit to Nescot was part of ORT’s Hatter technology seminar programme, where professional educators from around the world explore the latest developments in science, technology, engineering, and maths teaching and learning.

Somayyeh Clifton, Head of Quality Improvement & Innovation at Nescot, who led the masterclass, said: “It’s been so fantastic to welcome delegates from across the globe to Nescot to share ideas, experience, and knowledge on AI. It’s also been brilliant to give them a demo of our incredible equipment, which makes learning exciting, interactive, and fun. Working with other education professionals like this is so valuable, with different perspectives helping to inspire our work

going forward. We're all working to give students the best education, which will lead to fulfilling careers in the modern world. Our excellent facilities at Nescot have been a game changer."

Leor Harel, World ORT Learning Development Manager, said: "Nescot's VR classrooms are a groundbreaking approach to education and immersive technology. This visit was a perfect opportunity for our group of global education experts to see first-hand a world-leading provision. We are delighted that our teachers will go back to their schools and apply the principles and learnings from their time at Nescot."

Nescot is a hub of innovation, with the Sussex and Surrey Institute of Technology hosting robotics, AI, and cyber security facilities. The college is part of the AI in Education initiative, with Principal and CEO Julie Kapsalis sitting on the Strategic Board. AI in Education aims to support and advise schools and colleges so they can maximise the benefits of AI and minimise the risks.

The funding to create the immersive space was provided from the Government's Local Skills Improvement Fund, a project which aims to support local people into work. As well as being beneficial for education professionals and Nescot students, the college is encouraging local businesses to get involved by using the technology to train staff. Partnerships with business and enterprise are invaluable for both parties, as organisations get to access cutting-edge training and learning resources, plus a pool of talented, experienced students who can enter the workforce via apprenticeships, work placements, and post-college recruitment.

Nescot offers college courses for school leavers and adults, with a wide range of career-focused vocational courses including Animal Care, Business, Computing and IT, Construction, Performing Arts, Childcare, Health & Social Care, and Beauty Therapy.

To find out more, call 020 8394 3038, visit www.nescot.ac.uk or email adviceteam@nescot.ac.uk.

Local businesses interested in using the immersive classroom for training, or working with the college on apprenticeships, work placements, or recruitment should contact businesscentre@nescot.ac.uk or call 020 8394 8593.

Surrey University Launches UN-Affiliated Centre to Tackle Climate Change

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Drastically improving the UK's ability to address climate change is the grand challenge that the new United Nations Institute for Training and Research (UNITAR)-affiliated CIFAL centre at the University of Surrey will tackle.

CIFAL Surrey will be officially launched on Monday, 25 November, with a ceremonial UN flag raising, a Signing Ceremony and a panel event. In attendance will be a senior delegation from UNITAR, including Alexander Mejia, Head of the CIFAL Global Network and Director of the Division for People and Social Inclusion at UNITAR, other UNITAR delegates, Zöe Franklin, M.P. for Guildford, alongside a range of the university's collaborative partners in business and government.

Drawing on the University's strong research heritage and active engagement in sustainability, the new CIFAL Centre (Centre International de Formation des Autorités et Leaders), known as 'CIFAL Surrey', will work with UNITAR (the UN's training branch) and the CIFAL Global Network among other stakeholders to lead both training and capacity-building initiatives in sustainability. In doing so, CIFAL Surrey will make a unique and much-needed contribution to empowering climate leadership through enhanced climate literacy within and beyond Surrey.

As part of its activities, CIFAL Surrey will work in partnership with national and local government, industry, civil society, and beyond, developing sustainable economic practices, and helping to advance action towards the UN's Sustainable Development Goals.

Situated within the University's Institute for Sustainability, CIFAL Surrey will draw strongly on multi-disciplinary expertise in delivering both training and capacity building on a wide range of sustainability challenges, to help facilitate knowledge exchange among leaders in government, the private sector, and civil society - locally, nationally and internationally, as well as UK-based international organisations.

Professor Amelia Hadfield, the University of Surrey's Associate Vice President for External Engagement, and the new Director of CIFAL Surrey, said:

"Sustainability is far more than just a philosophy limited to net zero here at the University of Surrey. For us, and our community, sustainability reflects our deep, shared commitment to rebuilding a thriving planet for future generations.

From the fundamentals of climate change to advanced policy implementation, CIFAL Surrey will provide hands-on training and resources to national and local government, businesses, and community groups, helping them deliver on the demands for a more sustainable future.

“Focused on knowledge sharing, skills building and decision-making, CIFAL Surrey will connect local expertise with global insight, fostering collaboration across government, the private sector, civil society, and the United Nations system to drive sustainable progress. As CIFAL Surrey Director, I’m delighted to be working with our own Institute for Sustainability, other CIFAL centres around the world, and UNITAR itself to deliver these critical goals.”

CIFAL Surrey is the second UN-affiliated centre on campus, following the 2023 launch of the Centre of Excellence for Ageing, which appointed its first cohort of Fellows in June 2024.

Nathalie Hinds, co-founder of the Institute for Sustainability at the University of Surrey, said:

“If the UK is to be a leader on sustainability, leaders need more than just an awareness of net zero - they need the skills to create real change. CIFAL Surrey’s training gives leaders hands-on experience with sustainable practices and governance, focusing on systems thinking and breaking down silos across sectors. Alumni of CIFAL Surrey will leave not only with world-renowned accreditation but they will also be part of a global network of alumni, gaining access to our Sustainability Innovation Hub for insights, research partnerships, and ongoing support.”

Mr Alex Mejia, Division Director at United Nations Institute for Training and Research (UNITAR), said:

“We are honoured to inaugurate CIFAL Surrey, hosted by the University of Surrey, a renowned global institution at the forefront of innovation and learning. This new centre will mark an important step in our mission to advance sustainable development and capacity-building worldwide. It will serve as a vital hub for fostering collaboration, innovation, and knowledge exchange across the United Kingdom and beyond.”

Deputy Leader and Lead Councillor for Regeneration at Guildford Borough Council, Cllr Tom Hunt, said:

“We are proud to support the launch of CIFAL Surrey and be a key partner in the project. This initiative will play a big role in driving sustainable development. It will give us the chance to work together to share knowledge, improve skills and deliver practical solutions for our communities. One of our key priorities as a council is to create a more sustainable borough. Our partnership with CIFAL gives us a unique opportunity to work alongside local, national and international experts to ensure a bright, sustainable future for Guildford.”

Councillor Matt Furniss, Cabinet Member for Highways, Transport and Economic Growth at Surrey County Council, said:

“It’s a pleasure to be able to welcome the team from the United Nations to launch this new international centre in the heart of Surrey. The CIFAL centre will play a key role in promoting sustainable development at home and abroad while also opening up opportunities for our communities. It also reinforces the region’s global reputation for innovation, research and knowledge exchange.”

Epsom Schools Unite for Children in Need

23 December 2024



Schools across Epsom and Ewell, along with Banstead, joined forces to support this year’s **Children in Need** appeal, raising impressive amounts through creative and engaging activities.

Danetree Primary School - Guess the Bear’s Name

At **Danetree Primary School** in West Ewell, children participated in a range of activities designed to both entertain and educate. Younger pupils in Early Years and Key Stage 1 enjoyed a “guess the name of the teddy” competition, while Key Stage 2 students took on the challenge of guessing the number of objects in a jar, with winners taking home the prize-filled jar.

The school also held a non-uniform day, contributing to a fundraising total expected to exceed £800. Reflecting on the event, Reception Class Teacher **Tracy Willemse** highlighted its broader significance:

“Events like this support teaching children about the importance of charities - how they help people in need and promote community values such as diversity, equality, and inclusion.”

The Vale Primary School - Spotty Fun and Coin Trails

Staff and pupils at **The Vale Primary School** embraced a spotty theme, donning polka-dotted outfits for their fundraising efforts. The school organised a variety of activities, including a coin trail created from donations brought in by pupils, and a raffle for Pudsey Bear toys donated by the PTA.

Year 6 pupils enthusiastically sold raffle tickets ahead of the event, with winners announced during a celebratory assembly. Classroom activities also helped pupils learn more about the work of Children in Need. The Vale aimed to raise over £500, a testament to the community's generosity.

"Preparing children as active and empathic citizens is central to our ethos," said Co-Headteacher **Cathy Browne**.

Warren Mead School, Banstead - Make Life Lighter

At **Warren Mead School** in Banstead, the theme "Make Life Lighter" inspired a vibrant day of fun-filled activities. Pupils and staff came dressed in costumes ranging from disco outfits to Pudsey Bear-inspired ensembles. The day began with an energetic assembly featuring a "fizzy drinking challenge," setting the tone for the festivities.

Children participated in a **Pudsey Maths Challenge**, treasure hunts, and group art projects, with a focus on mental health and emotional resilience. Younger pupils enjoyed learning the Piggie-Wiggle dance and taking part in a school disco. An after-school fun run brought together staff, parents, and the local community, rounding off a memorable day.

Assistant Headteacher **Jess Moylan** expressed pride in the school's efforts:

"The smiles and camaraderie displayed throughout the day reflected our commitment to fostering compassion, unity, and resilience." Warren Mead aimed to raise £500, building on the success of previous years.

A Collective Effort

All three schools are part of the **GLF Schools Multi-Academy Trust**, which collectively raised thousands for the cause. The enthusiastic participation and creative approaches from Danetree, The Vale, and Warren Mead highlight the local commitment to supporting those in need, while also instilling important values in the next generation.

Community Spirit Shines

Across Epsom and Ewell, these Children in Need events have shown the power of community spirit, creativity, and compassion, making a real difference for children and families in need.

Surrey Uni to research mono-syllabic complexity

23 December 2024



The University of Surrey is part of an international team of researchers that has been awarded £8.3 million to better understand human language by researching one of the world's most complex linguistic systems.

Thanks to a prestigious Synergy Grant from the European Research Council, the project will explore the West Nilotic languages of East Africa. These languages are able to pack more information into a single syllable than any other known language family. Exactly how such systems could have evolved remains a mystery.

The project brings together experts from the Surrey Morphology Group, the University of Edinburgh, and France's CNRS, in partnership with institutions in the USA, and will engage stakeholders in South Sudan, Ethiopia, and Kenya to ensure wide-reaching impacts, including literacy initiatives.

Professor Matthew Baerman, who leads the project at the Surrey Morphology Group at the University of Surrey, said:

"Our aim is to discover how West Nilotic languages evolved structures of such complexity, and just as importantly, why other languages did not. It's a puzzle that could reshape how we think about the cognitive limits of human language."

The team's approach combines traditional fieldwork with cutting-edge experimental techniques to reconstruct the historical evolution of these languages. The findings promise to have far-reaching implications, offering new insights into the possible and impossible in human language evolution.

Professor Erich Round, Research Centre Leader of the Surrey Morphology Group, said:

"The Surrey Morphology Group has carried out world-leading research into the wonders of human language for over thirty years. We are delighted to have secured our second major grant from the European Research Council in two years,

and our third since the Council's establishment in 2007. Most of all, we're thrilled to bring to the world's attention some of humanity's most astounding and illuminating linguistic systems."

Professor Baerman continued:

"The languages we find in the world today represent just a small fraction of what must have existed over the course of history, meaning much remains to be discovered about the full potential of human language. West Nilotic gives us the means to uncover this potential."

Faces and People (Sudan) a west-Nilotic language License details

Epsom and Ewell College wins Surrey's employer of the year

23 December 2024



Nescot college in Reigate Road, Ewell, won "Employer of the Year" at the Surrey Business Awards last night, against some stiff competition. (NESCOT stands for North-East Surrey College of Technology.)

The **Surrey Business Awards**, which took place at G Live in Guildford, is the largest event of its kind and the most prestigious in the county. Winners were chosen by a distinguished panel of judges, consisting of industry experts and influential business leaders.

Nescot has an annual turnover of £25m and is one of the largest employers in East Surrey, supporting over 7,000 learners and 500 businesses each year. The award highlights that Nescot's greatest asset is its staff, who work 365 days a year (the farm never closes!) to ensure that the 60-acre site is fully functioning and providing high quality training and facilities.

Nescot is rightly proud of its work culture and its leadership, with 650 staff who support thousands of learners each year, but also have the opportunity to learn, develop and progress in their careers.

Julie Kapsalis, CEO and Principal at Nescot said "We're over the moon to win the 'Employer of the Year' award. Nescot is a unique and special place to work and our investment in staff wellbeing and professional development is a key priority. We have an incredible community of dedicated staff who share our vision and work tirelessly, for both our students and our staff. This award is for them."

Julie was also recognised personally last night with a nomination for 'Businessperson of the Year' as a result of her work both within the college and externally.

As well as her role at Nescot, she has been Chair of the Coast to Capital Local Enterprise Partnership (LEP) for the last four years and on the Board for over a decade. The role helped to oversee £275 million of investment in the region which supports infrastructure, skills, heritage and businesses. For the past three years she also served as Chair of Catalyst South - a group of six LEPs covering the South East as a direct voice to Government. Julie is also a director, trustee, advisor and mentor and already has awards under her belt for inspirational leadership, corporate social responsibility and being a community hero.

In addition to the award win and nomination, Nescot was also a proud sponsor of the 'Future Talent of the Year' award at the event, attended by business leaders and guests from across Surrey.

Anyone interested in joining the team at 'Employer of the Year' - Nescot, can visit www.nescotcareers.co.uk or email jobs@nescot.ac.uk

Photo: Nescot team: Donna Patterson - Chief People Officer, Andy Cowan - Deputy Principal Curriculum and Quality, Julie Kapsalis - Principal and CEO and Sarah Watson - Chief Operating Officer.

Epsom school fined for finger loss

23 December 2024



A school trust in Surrey has been fined after part of a pupil's finger was amputated.

The five-year-old boy, a Year 1 pupil at Danetree Primary School in Epsom, had been leaving the toilet on 15 June 2022 when his right hand slipped and went into the hinge side of a door.

There was no door guard installed and he trapped his right hand in the door.

This led to the tip of his middle finger becoming detached as his right hand was stuck in the door.

A teacher found the tip of his middle finger, and the boy underwent surgery to re-attach his finger at St Georges Hospital in Tooting, London.

Although younger pupils in Key Stage 1 were taught in a newer building where hinge guards had been fitted on the doors, the incident occurred in a separate building where the older children in Key Stage 2 were taught.

The Key Stage 1 pupils would use the Key Stage 2 building at least once a week to use its library and learn about music and science. While in this building, the Key Stage 1 pupils were allowed to use the toilets unsupervised.

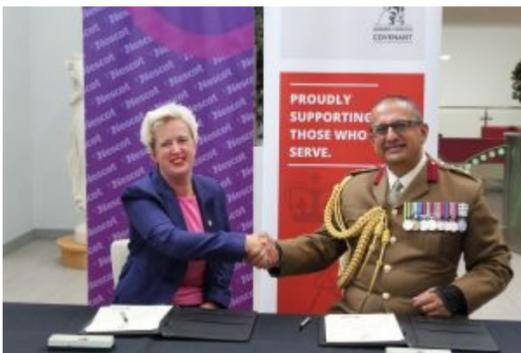
A Health and Safety Executive (HSE) investigation into the incident found GLF Schools, the trust that runs Danetree Primary School, had failed to identify the risk to its Key Stage 1 pupils while using the toilets. This meant hinge guards were not installed on the toilet doors of the building where Key Stage 2 pupils were taught.

GLF Schools, of Picquets Way, Banstead, Surrey, pleaded guilty to breaching Section 3(1) of the Health and Safety at Work etc. Act 1974. The trust was fined £6,000 and ordered to pay £6,875.70 in costs at Staines Magistrates' Court on 30 October 2024.

HSE principal inspector Emma Stiles said: "This little boy and his family could have been spared a lot of pain and upset if the trust had installed widely available, effective and inexpensive hinge guards on the doors the young children had access to. I would ask all schools to review their estates to make sure they have hinge guards where needed so no other children are hurt in this way when at school."

Nescot proud to sign the Armed Forces Covenant

23 December 2024



North East Surrey College of Technology (Nescot) is proud to have officially signed the Armed Forces Covenant at a special event at the college today (16 October). The Covenant is a formal commitment to those who serve and have served that they will be treated with fairness and respect, and a recognition of the valuable attributes they bring to the workplace.

The Armed Forces Covenant (AFC) was signed at the event by Julie Kapsalis, Principal and CEO of Nescot and Brigadier Ben Banerjee KHS QVRM DL VR, Head Army Medical Services Reserve, Army HQ.

By signing the AFC, Nescot has pledged to uphold its key principles and to recognise the critical contribution that the Armed Forces community make to our country.

Nescot has already been awarded the Bronze ERS Award for the college's commitment to the Armed Forces.

Julie Kapsalis, Principal and CEO of Nescot said, "Nescot is extremely proud to sign the Armed Forces Covenant and pledge to continue to show our support for the Armed Forces community, both as an education and training provider and

as an employer.

“Indeed, Nescot’s first Principal, Colonel Thomas Buchanan was a decorated army veteran of ‘legendary coolness and bravery’. He was admired for his compassion, foresight, leadership and encouragement. In 1964 he became Deputy Lieutenant for Surrey, and was appointed an OBE for services to education in 1970. I am very proud to stand in his shoes today and to do something that I believe he would have been proud of and that continues his legacy.”

Julie Kapsalis added, “We continue to have a unique role as an educational institution in providing opportunities for members of the Armed Forces to further their education and enhance their career prospects. We are also committed to being an Armed Forces friendly employer. We recognise the unique skills and experiences that members of the Armed Forces bring to our community. Their leadership, discipline, and resilience enrich our campus culture and provide valuable perspectives that benefit all students.”

The event at the college included a flag raising ceremony by students representing our Public Services cohort, Leo, Skye and Poppy.

Leo, a student on our Level 3 Public Services programme said, “It’s an honour to be part of the Covenant signing event today. I am interested in a military career and it’s great that we get a chance to have visits and opportunities to interact with the Armed Forces here at Nescot.”

Through our Public Services courses, our students are offered regular engagement opportunities with the Armed Forces as part of their training and also take part in the annual Poppy Appeal with the Royal British Legion.

Earlier in the day, our Public Services students benefitted from inspirational talks in the college’s theatre from Brigadier Banerjee, Head Army Medical Services Reserve who spoke to them about some of the amazing experiences from his career, and from Ben Trevan from Nescot’s Foundation Learning team and British Army Reservist with The Royal Regiment of Fusiliers.

Ben Trevan spoke to the students about his role as a Learning Support Assistant at the college and as a Reservist. He said, “I have been a Reservist for two years now. Although the role can be challenging, it offers a great sense of camaraderie. I have been able to use my transferrable skills from both, teaching and my role as a Reservist. More importantly, I am able to fit my Reservist role around my teaching job. I am very grateful and thankful to my employer, Nescot for their support with respecting my commitments and allowing me the time to train. The signing of the Armed Forces Covenant reiterates the fact that I’m supported both by the Army and Nescot, which are both a part of my daily life.”

Invitees at the event also had opportunities for networking and were invited to tour Nescot’s facilities including the college’s cutting edge immersive learning spaces.

The event which was held at the college’s Skills Park was also attended by representatives from the Armed Forces community and local organisations from: Reserve Forces’ and Cadets’ Association for Greater London (GL RFCA); 135 Geographic Squadron; Epsom & Ewell Royal British Legion; Royal Navy; Epsom & Ewell Borough Council; Combat Stress, Nescot staff and students.

More information about the covenant, including how organisations can help support the forces community, is available on the Armed Forces Covenant website.

Related report:

Surrey Scouts honour Armed Forces Covenant

Image: Julie Kapsalis, Principal and CEO, Nescot and Brigadier Ben Banerjee, Head Army Medical Reserve, Army HQ, sign the Armed Forces Covenant at Nescot.

Epsom Station gets an artistic makeover

23 December 2024



In the hustle and bustle of daily life, railway stations often feel like transient spaces where passengers rush through without a second thought. However, at Epsom Station, something unique is happening. Thanks to the *Art@the Station* initiative from **The Art Society UK**, along with a group of talented young students from Epsom and Ewell’s own **Nescot**, the station has become a vibrant hub of art and creativity, offering a refreshing experience to commuters.

As part of the *Art@the Station* initiative, art and design students from Nescot (North East Surrey College of Technology) have created striking artwork inspired by Epsom’s most iconic landmarks. The project, designed to showcase emerging talent in public spaces, not only adds life to the station but also provides passengers with a more enriched and inspiring

environment. The station's subway now serves as a gallery, featuring bold, colourful images that celebrate the town's rich heritage.

Angie Child from **The Art Society Epsom** led this creative transformation as project manager. The theme, ***Sense of Place***, invited students to capture the essence of Epsom—its famous racecourse, clock tower, and other key sites. The result is a stunning display that has already stopped passengers in their tracks, prompting them to admire and even photograph the eye-catching designs.

"I am delighted with the outcome of the wonderful images the Nescot students have created for Epsom station," said Angie. "The students went above and beyond to fulfil the brief. Even while we were still installing the artwork, passengers hurried past but stopped to admire and take photos of the beautiful, colourful pieces."

The project, supported by a grant from Govia Thameslink Railway (GTR), is not only a boost for the station's appearance but also a significant achievement for the students involved. They had the chance to showcase their work to a wider audience, gaining real-world experience in the process. Special recognition was given to Nescot's graphic design tutor, Miles Merritt, who encouraged and guided the students throughout the project, integrating it as an exciting extension of their coursework.

Out of more than twenty designs, the standout works from George Pearson, Alfie Carr, Callum Jones, and Wiktorina Sawicka won the competition. These students, all from the local area, embraced Epsom's history and reimagined it in vibrant graphic designs. Their interpretations offer a fresh perspective on the town's heritage, creating a dynamic fusion of past and present.

GTR's Community Engagement Manager, Rob Whitehead, worked closely with the students, even providing them with rail tickets to visit an art exhibition in London as part of their creative journey. "We're thrilled to support this initiative in Epsom and showcase the incredible talent of Nescot students," Rob said. "Our Station Partners Small Grant fund has helped bring this fantastic community project to life."

The *Art@the Station* project isn't limited to Epsom. Younger students from Epsom Downs School also contributed, creating a large mural titled *Rockets* at Tattenham Corner Station. The initiative will continue into 2025, with more artwork planned for display at Ewell East Station, ensuring that local creativity continues to enrich the travel experience.

This collaboration between The Art Society, Nescot, and GTR is a powerful example of the impact community-driven projects can have. By bringing art into public spaces, these initiatives not only enhance the visual appeal of stations but also provide passengers with a deeper connection to local culture. Moreover, they offer younger generations a valuable opportunity to actively participate in and be recognised within their community.

For now, as commuters pause to admire the bright, bold designs at Epsom station, one thing is clear: art has the power to transform even the most ordinary spaces into something extraordinary.

Romana Sustar

<https://www.linkedin.com/in/romanasustar/>

Find out more:

Nescot, The Art and Design Department:

The Art Society Epsom

<https://www.theartsocietyepsom.org.uk/>

GTR

Art @ the Station

<https://theartsociety.org/arts-news-features/art-station>

Surrey student satellite stars

23 December 2024



Meet DARWIN - the award-winning, small satellite that could detect and track wildfires, built by students from the University of Surrey.

Surrey's Peryton Space team has won the prestigious UK Students for the Exploration and Development of Space (UKSEDS) satellite design competition, beating teams from around the country for the second year in a row.

DARWIN - also known as Detection, Analysis and Research for Wildfire Investigation Network - is just 10cm x 10cm x 30cm.

Team leader Mya White, who recently finished the second year of her BEng degree in Aerospace Engineering and who has started a year-long industry placement, said:

“We used a thermal camera to detect heat spots and an optical camera to determine distance so that we could calibrate the temperature readings. We also wrote software to split the area we monitored into a grid so we could pinpoint exactly where the simulated fires were.”

Peryton Space also enjoyed success at other UKSEDS competitions.

They won the In-Orbit Servicing and Manufacturing competition, which gives students experience in mission design, engineering, business development, and other industry-relevant skills.

Peryton students came second at the competitive Mach-24 rocketry competition, where their high-powered rocket reached an altitude of 2.5km, Peryton’s highest rocket launch to date. It successfully launched and deployed the CanSat built by the team.

Away from UKSEDS, Peryton Space also won an award for the best presentation at the Race2Space National Propulsion competition, which challenges students to design, manufacture and test rocket engines.

Harvey Nixon, who leads the research and development branch of Peryton Space and who is studying for an MSc in Space Engineering at Surrey, said:

“We are delighted with our 2024 results and really proud of the team at the University of Surrey’s Peryton Space. On our team, there are students of all backgrounds and disciplines, which ensures we have a range of expertise, and our members get invaluable experience ready for careers in the space sector.

“Some members of Peryton Space are working on the Jovian-1 satellite project here at the University of Surrey. This involves collaborating with industry professionals and students from partnering universities and applying the skills learnt from Peryton Space to working on a space-bound project.”