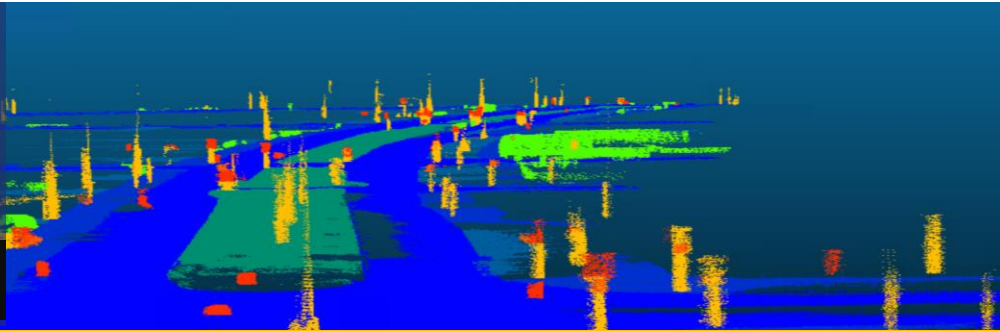


# DIGITAL ROADS OF THE FUTURE

2023 OCTOBER | Issue 3

NEWSLETTER



## ANNOUNCEMENTS

### Alumni Network

Dr Georgios Hadjidemetriou, our Senior Research Associate Data Science left the Digital Roads Prosperity Partnership to take up the role of Assistant Professor in Construction Technology at Technion - [Israel Institute of Technology](https://www.technion.ac.il/). You can find out more of what Georgios has been doing with us at Digital Roads here: [Dr Georgios Hadjidemetriou | Digital Roads of the Future \(cam.ac.uk\)](https://www.cam.ac.uk/news/digital-roads-of-the-future/dr-georgios-hadjidemetriou).

## NEWS

### In the News

#### Digital Roads Prosperity Partnership Annual Review and Workshop 2023



The Digital Roads Prosperity Partnership marked a significant milestone with its first annual review and workshop, held at the West Hub in Cambridge on 8 September 2023. The event commenced with an opening address by Professor Durkan, Head of the Department of Engineering at the University of Cambridge, followed by Professor Middleton, representing the Division and the Group. Richard Pedley, Chief Digital and Information Officer at National Highways, delivered a keynote speech, underscoring the strategic imperatives of National Highways and emphasizing the critical role of research in advancing the field. Following the keynote address, Professor Ioannis Brilakis and Dr Lavindra de Silva presented a comprehensive overview of the project's progress and accomplishments during its inaugural year. Notable achievements included the establishment of a robust road dataset to form the foundation of the cyber-physical platform and the

initiation of research themes that will contribute to the platform's development. Read more here [Digital Roads Annual Review 2023 | Digital Roads of the Future \(cam.ac.uk\)](https://www.cam.ac.uk/news/digital-roads-of-the-future/digital-roads-annual-review-2023).

#### The Digital Roads Dataset is now available online

Digital Roads' partner, National Highways, provided a dataset of mobile mapping data collected by KOREC using a Trimble MX9, GPR and thermal data for 42.8km of the Strategic Road Network from the A11, A12 and A14. This data has been prepared to be able to;

- Build a Digital Twin; a 3D environment of the roads surveyed where every asset and defect is labelled based on the ground truth
- Develop a framework for automating the building of the Digital Twin

A curated subset of the dataset is being made available here [Digital Roads Dataset | Digital Roads of the Future \(cam.ac.uk\)](https://www.cam.ac.uk/news/digital-roads-of-the-future/digital-roads-dataset)

## FutureRoads Programme Annual Review 2023

We welcomed our MSCA Future Roads partners to Cambridge to join our Fellows, academics, and Supervisors at the Future Roads Annual Review on 7 September. FR MSCA Cohort 1 Fellows on their first anniversary presented their research progress and their plans for the second year of their Fellowship. FR MSCA Cohort 2 Fellows gave an update on their planned activities for their first year.



## FR Fellows @ TAROS Conference

FR MSCA Fellows from Automation & Robotics Research Theme Dr Arsen Abdulali, Dr Chapa Hewa Pelendage, Dr Kai Fung Chu and Dr Yue Xie had an active role at this year [TAROS Conference](#) which was held in Cambridge from 13 to 15 September 2023. Beside presenting their research work, FR MSCA Fellows got the opportunity to interact with the members from prestigious journals and industry partners during the interactive events that took place at the conference.

## Future Roads Cohort 2 Technical Workshops



In the previous months, successful 2-day technical training was delivered for MSCA Future Roads Cohort 2 Fellows. During this training, they had the opportunity to enhance their research and technical skills in three out of the five main FUTUREROADS Programme research disciplines: Digital Twins, Data Science, and Smart Materials. In the next few weeks, Cohort 2 fellows will complete their technical training with the Automation & Robotics and Sustainability Workshops.

## FUTUREROADS COFUND Programme Mid Term Visit



EC FUTUREROADS COFUND Programme Project Officer Oscar Barreiro Mouriz visited the Programme Coordinator and Fellows right here in Cambridge on 4 October. It's been two years since the program began and we had the opportunity to showcase the programme progress. FUTUREROADS MSCA Fellows representatives introduced themselves, shared insights about their work, discussed their expectations from the program, and gave present their future plans.



On 22 September 2023, DRF Initiative has proudly host the Panel Discussion “Digitalisation of the Road Industry – Way Forward” featuring esteemed experts: Prof Ioannis Brilakis – Professor of Civil & Information Engineering, University of Cambridge, Phillip Proctor - Head of Research, National Highways, Dr Lavindra de Silva - Principal Research Associate (Research Professor) in the Department of Engineering at the University of Cambridge Session was moderated by Dr Mahendrini Ariyachandra. Recordings of the event can be found [here](#).

## New Grants

FUTUREROADS Cohort 1 MSCA Fellow Dr Yiming Zhang and Digital Roads Senior Research Associated Dr Georgios Hadjidemetriou were successful with their research proposals in the Laing O’Rourke Centre Trimble Fund 2023: “Digital Twin-based Spatiotemporal Prediction of Pavement Performance”.

## University of Cambridge, College Fellowships

### Dr Jingying Xu Named David MacKay Research Associate at Darwin College, University of Cambridge

MSCA Cohort 1 Fellow Dr Jingying Xu has been appointed as a one of the prestigious David MacKay Research Associate at Darwin College, University of Cambridge. This prestigious accolade provides early career postdoctoral scholars at the university with an exclusive opportunity to engage with and leverage the expertise of the Cambridge Zero Policy Forum.

### Dr Yiming Zhang offered Post-Doctoral Research Associate at St Edmund's College, University of Cambridge

MSCA Cohort 1 Fellow Dr Yiming Zhang has been awarded the esteemed college fellowship as a Post-Doctoral Research Associate at St Edmund's College, University of Cambridge.

## TALKS, LECTURES AND EVENTS

### Past talks

#### Digital Twin International Conference - “Digital roads of the future: towards a highway digital twin for road maintenance management” 11th October

MSCA Cohort 2 Fellow Dr Mengtian Yin delivered the presentation “Digital roads of the future: towards a highway digital twin for road maintenance management” at the 3rd Digital Twin International Conference (online event). Presentation time: UK Time: 9:30 am – 10:00 am , October 11th 2023; Paris Time: 10:30 am – 11:00 am , October 11th 2023.

#### Geo-Institute (G-I) ASCE Seminar Series - “Data-driven Three-dimensional Reconstruction of Subsurface Stratigraphy” 16<sup>th</sup> October

MSCA Cohort 2 Fellow Dr Ze Zhou Wang delivered a seminar on “Data-driven Three-dimensional Reconstruction of Subsurface Stratigraphy” on 16<sup>th</sup> October at the seminar series organised by the Geotechnical Engineering at UT Austin.

### Upcoming talks

#### Upcoming FR Webinar Series - “Circular Economy in Roadway Infrastructure: An Engineering Perspective” 23<sup>rd</sup> October

MSCA Cohort 1 Fellow Dr Anand Sreeram will deliver his talk “Circular Economy in Roadway Infrastructure: An Engineering Perspective” on 23 October as part of the FR Webinar series.

**Invited Speaker at the 2023 National Road Safety Conference – “Driving a digital revolution of our road network: Digital Roads of the Future Initiative” 16<sup>th</sup> November**

DRF Programme Manager Dr Mahendrini Ariyachandra will deliver a session on “Driving a digital revolution of our road network: Digital Roads of the Future Initiative “ on 16<sup>th</sup> November 2023 at the [2023 National Road Safety Conference](#), which will take place at the De Vere Cotswold Water Park in Gloucestershire. [Click here](#) for more information and registration for the event.

**DRF Lunchtime Clinics – Michaelmas Term 2023/2024**

**20<sup>th</sup> October 2023**

**Special session for DRF Researchers  
“Mastering the Art of Effective  
Communication: Presentation and Public  
Speaking Skills Session”**

Haritha Jayasinghe, University of Cambridge



**27<sup>th</sup> October 2023**

Dr Hui Ben, Newcastle University



**3<sup>rd</sup> November 2023**

Greg Demchak, Bentley Systems



**10<sup>th</sup> November 2023**

Prof Farzad Rahimian, Teesside  
University



**10<sup>th</sup> November 2023**

Prof Ravindra Gettu, Indian Institute of  
Technology Madras



**10<sup>th</sup> November 2023**

Prof Nikhil Bugalia, Indian Institute of  
Technology Madras



**17<sup>th</sup> November 2023**

Dr George Economides, Department  
for Transport (DfT)



**24<sup>th</sup> November 2023**

Mr Nenad Nikolic, United Nations  
Economic Commission for Europe  
(UNECE)



**1<sup>st</sup> December 2023**

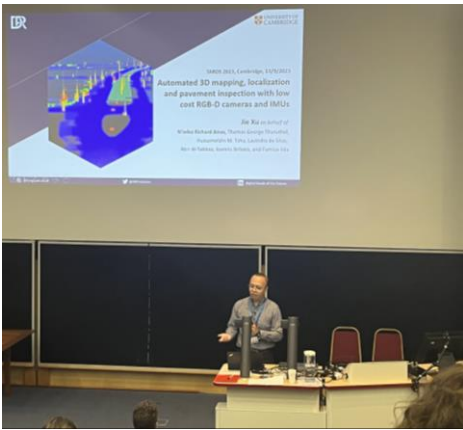
Dr Katherine Ingham, National  
Highways



### Presentations



Dr Georgios Hadjidemetriou presented paper, '[On the performance of pothole detection algorithms enhanced via data augmentation](#)' at the European Working Group in Transportation (EWGT 2023) in Santander, Spain, on 6-8 September.



Anvo, N. Z. R., Thuruthel, T. G., Taha, H. M., de Silva, L., Al-Tabbaa, A., Brilakis, I., & Iida, F. (2023, September). [Automated 3D Mapping, Localization and Pavement Inspection with Low Cost RGB-D Cameras and IMUs](#). In Annual Conference Towards Autonomous Robotic Systems (pp. 279-291). Cham: Springer Nature Switzerland.' This paper was presented at the 24th TOWARDS AUTONOMOUS ROBOTIC SYSTEMS (TAROS) Conference at Cambridge, UK, 13 September 2023 by Dr Jie Xu (Senior Research Associate in Automation & Robotics) on behalf of Nzebo Richard Anvo.

### Publications

D. Palin, H. T. Abdalgadir, S. Rengarajua, C. Vlachakis, G. M. Hadjidemetriou, A. Marie d'Avigneau, H. T. Abdulgadir, S. Rengarajua, N. R. Anvo, M. Girolami and A. Al-Tabbaa, Assessing the durability of concrete road repair materials via DIC, the 10th Transport Research Arena conference, TRA 2024, Dublin, Ireland, **full paper accepted**.

C. Vlachakis, G. M. Hadjidemetriou, D. Palin, A. Marie d'Avigneau, H. T. Abdalgadir, S. Rengarajua, N. R. Anvo, M. Girolami and A. Al-Tabbaa, Vision-based Multi-perspective Road Pre-damage Detection, the 10th Transport Research Arena conference, TRA 2024, Dublin, Ireland, **full paper accepted**.

Ariyachandra M.R.M.F. and Brilakis I. Leveraging railway topology to automatically generate track geometric information models from airborne LiDAR data, Automation in Construction, 155 (November 2023), DOI [10.1016/j.autcon.2023.105068](#).

Please send any items that you would like to be included to [drf-initiative@eng.cam.ac.uk](mailto:drf-initiative@eng.cam.ac.uk).