Selected Publications

Belfast


Warwick


Oxford


Nottingham


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Spring Newsletter 2023

In this newsletter, we review some of the contributions made in the last few months by the academic partners of PathLAKE. The references for scientific papers are collected on a Google Scholar page created for PathLAKE, which can be conveniently accessed using the QR code on page 5. To date 82 papers have published with over 1500 citations, giving an insight into the extraordinary impact the PathLAKE project has made to the field of computational pathology. At the end of March 2023, the Innovate UK funding for PathLAKE concludes and we will need to prepare the PathLAKE data lake for transition to becoming part of the West Midlands Secure Data Environment. This will be the final edition of the newsletter in its current form and we wish to say a big thank you to all my PathLAKE partners and colleagues for the tremendous hard work and commitment that they have all shown over the past four years. Digital and computational pathology are now firmly established in the UK, and we look forward to continuing to build on the firm foundations we have established and continue to maximise the benefits to come from PathLAKE in the future.

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The team has explored and developed ways of improving the diagnostic efficiency and level of collaboration and communication and to use AI to develop programmes, which, for instance, can identify certain cancers more precisely and provide an early indication of the cellular pathology labs in Oxford. Together with our colleagues in other regions, this progress is a significant achievement which has led to better diagnostic services of our NHS in the near future.

What has been achieved?

Belfast

Transforming Pathology in Cancer Care

Belfast

PathLAKE has been supported four PND projects, resulting in several published papers in high impact factor journals. We now have a more multidisciplinary approach to AI already used in clinical practice.

Nottingham

PathLAKE facilitated a series of meetings and training courses to promote AI and digital pathology within the pathology community. The online teaching modules contributed to a variety of teaching cases of breast, prostate and colorectal pathology; and comprehensive metadata for training and validation of AI algorithms developed by other researchers and academic consortia, and it is unique in the digital pathology/AI space.

Warwick

The breadth of algorithms developed in WP3 is an indication of the importance of this development. The PathLAKE algorithmic space now includes AI tools for targeted cancer marker assessment, and the diagnostic performance of prostate at all levels of the diagnostic pipeline (Oxford) and comprehensive applications to bring immunohistochemistry and computer vision into routine diagnostic workflows. (Belfast)

Warwick

Focus, together with our pathologist colleagues at LCM/hector led by Prof David Snead, we have developed critically important AI microspectroscopic image-based spectral analysis. These strategies provide a novel and effective means of novel biomarker validation.

Oxford

Our key achievements in the Oxford team have been spread across the integration and implementation of digital pathology and the development of AI algorithms for various applications.

What does this mean for patients?

Belfast

While other consortia focus primarily in digitization of pathology services, PathLAKE is pioneering the development and routine application of AI tools to digital pathology, opening the path to a better diagnosis for our patients.

Nottingham

The use of AI and digital pathology will facilitate better cancer patients in terms of earlier and more advanced management, with shorter turn-around times. DP and AI will provide an invaluable help to reporting pathologists, who already suffer staff shortages, and will ease sharing challenges and difficult cases with expert pathologists in addition to promoting research.

Oxford

Much of the work we have done in the PathLAKE project has been for direct patient benefit. Time savings and greater efficiency in the cellular pathology side mean patients receive bopsy results more quickly, especially set against a background of a difficult time for healthcare systems. Additionally, the AI tool created the potential to improve the face-to-face relationship in breast cancer, replacing expensive multigene assays with AI and demonstrating the ability of AI to be used as a prognostic and predictive tool in pathology.

What impact has PathLAKE had in the digital pathology/AI space?

Belfast

PathLAKE was the first program that the UK SME, Sana Analytics joined several years ago. This represented a significant endorsement to Sana, which this SME has followed with subsequent R&D programs with UHR and NHR totaling more than £5m in R&D revenue.

Nottingham

PathLAKE has facilitated full digitisation of the Nottingham and Derby Pathology Trust. A multidisciplinary team effort introduced a digital pathology workflow through the pathology lab including integration with the Laboratory Information Management System, the installation of operational equipment, digital pathology & validation processes and clinical governance components. The latter is the focus of WP3 of PathLAKE.

Warwick

The COBI tool will allow faster diagnosis of normal colonoscopies reducing the waiting time for patients and better management of colon cancer patients. The breast cancer prognostication tool on potentially more than 80K whole-slide images that will be available to researchers and commercial entities fulfilling the appropriate access procedures.

Significantly, full digitisation of the South Pathology Partnership which includes Oxford University Hospitals NHS Foundation Trust, Buckinghamshire NHS Trust, Milton Keynes University Hospital and Great Western Hospitals Trust is underway as part of PathLAKE’s Warwick. Warwick

General impact on the increased digital pathology uptake in the country and beyond.

Listed dataset, the largest dataset with annotated datasets on colorectal pathology that has been adopted by a variety of users ranging from researchers across the world and in the top pharma, with more than 150 downloads already.

Annexation guidelines paper for computational pathology (nottingham)

Belfast

PathLAKE masterclasses, bringing together pathologists, NHS, and the related CONCIL charity who then work together to set up a national registry.

The PathLAKE portal enables querying of the PathLAKE image repository, providing access to 80K whole-slide images with linked clinical metadata for training and validation of AI algorithms developed by other researchers and academic consortia.

Warwick

PathLAKE has had a significant impact in Oxford by enabling the development of digital pathology services at Oxford University Hospitals NHS Foundation Trust. PathLAKE is fully accessible for digital pathology under ISO15189 - and completed the journey from a concept to a commercial and demonstrable AI tool.

Nottingham

What impact has PathLAKE had? The project has been a huge leap forward in the field, leading with the important question of what does this mean for patients?

Emrah Rathi, we have developed novel AI based predictive model for detection of HER-2 breast cancer patients. A third major outcome has been the development of a gynaecology-based AI pipeline to diagnosis pre-invasive lesions. Further, we have developed AI-based tools to streamline pathologist workflows and help deliver personalised medicine.

Oxford

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Warwick

The PathLAKE project has pinpointed a few critical aspects to our group at Warwick and to our members in the Tissue Image Analytics TIA Centre and the company Sonrai Analytics.

The technology developed in the COBI program has been the development of a gateway portal to a large pathology image repository consisting of more than 80K whole-slide images that will be available to researchers and commercial entities fulfilling the appropriate access procedures.

Nottingham

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