



SCONe PROGRESS UPDATE AND PI&E STRATEGY

In 2024, the SCONe team visited 15 optometry practices and collected retinal images from across 6 health boards, bringing our project total to 37 practices across 9 health boards.

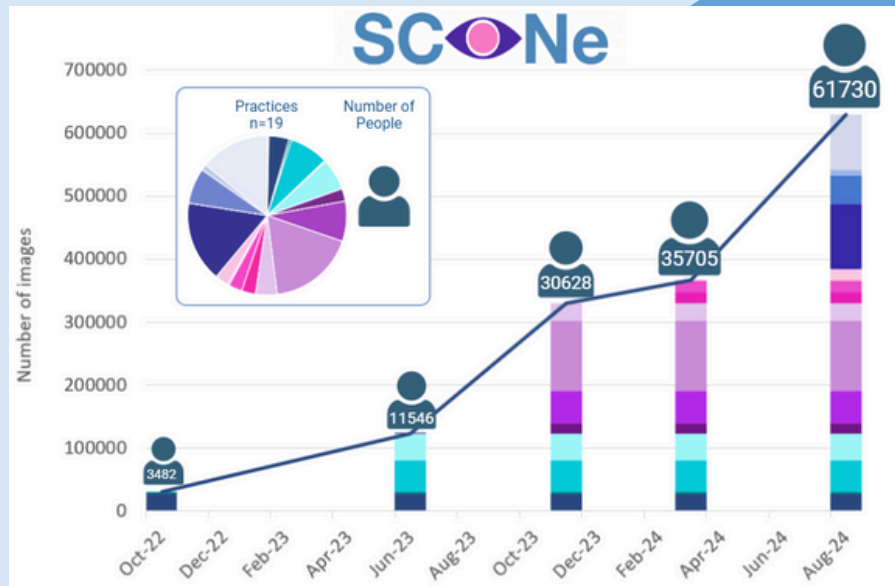
As of August 2024, the SCONe repository contains >600,000 linked images from >61,000 individuals.

A number of images collected are still in the processing stage and these will also be added to the repository in due course.

The graph (right) illustrates the data uploaded to the National Safe Haven, CHI linked to an individual then pseudonymised, between October 2022 and August 2024.

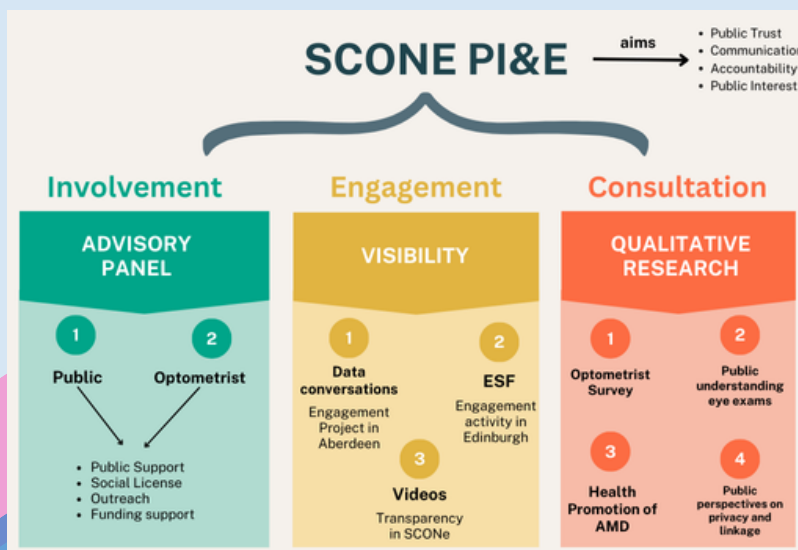
A big thank you to everyone involved so far.

Our project is Scotland-wide so we are keen to expand to every health board. We are still looking for independent optometry practices in Fife, Tayside, Western Isles and Highlands and Islands to participate.



To ensure our research advancements benefit everyone, SCONe has also developed a **Public Involvement and Engagement (PI&E) strategy** that includes the public in decision-making, fostering trust and transparency.

The SCONe PI&E strategy uses a three-tier approach: involvement, engagement, and consultation.



The **involvement** tier includes advisory panels to guide decisions on the SCONe repository.

Engagement focuses on raising awareness and transparency, connecting diverse groups to highlight the benefits of big data. **Consultation** gathers public feedback to refine strategies and promote inclusivity.

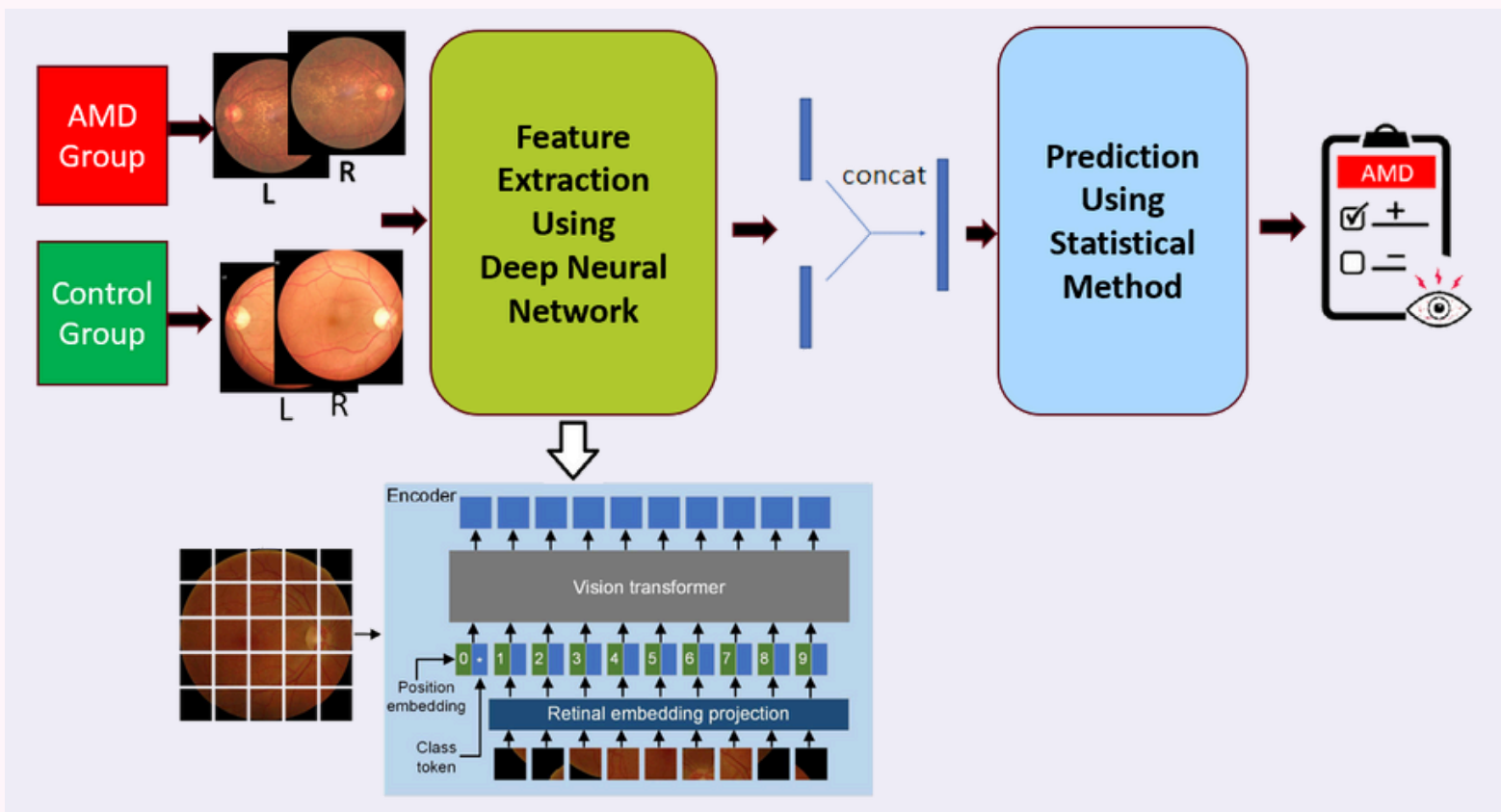
By involving the public from the start, SCONe ensures its research is ethical, relevant, and directly benefits communities. This approach enhances the project's impact and lays the groundwork for future initiatives, showing how public involvement can drive meaningful change in data science projects.



SCONe DISEASE PREDICTION MODELLING

Now that the SCONe retinal image repository contains a reasonably large number of images which predate the diagnosis of some key conditions, **we have begun our work to develop models which may predict signs of disease in the years leading to diagnosis.**

This work involves several steps. First, we must produce 'labels' which categorise each of the hundreds of thousands of pseudonymous, linked clinical records in the repository, to indicate whether a condition such as glaucoma or age-related macular degeneration (AMD) was noted during the appointment. For each individual, we identify the earliest date for each condition (as a proxy for their diagnosis date) and select the first pair of images after or on the same day as that 'diagnosis date'. A control group with similar demographics and co-morbidities (e.g., diabetes, hypertension) is also identified. Random subsets of images from disease and control groups are used to train a deep neural network to differentiate between them. The model is then tested on unseen data to ensure reliability for clinical applications. The graph below illustrates how deep neural networks analyse retinal images to extract features revealing patterns in eye health, combining data from both eyes to assess AMD signs, a leading cause of vision loss.



We continue to develop this work, refine the case and control identification process, and optimise the model training, which accounts for all the complexities in these real-world, pseudonymised data. Additionally, **we are developing advanced deep networks for longitudinal analysis to predict future disease risk** using a patient's fundus image history. These efforts aim to evaluate how deep networks utilise longitudinal data to predict the risk of a disease.





SCONe EVENTS

In November, SCONe team members attended the SOC conference in Glasgow. It was really great to meet and speak to so many optometrists and optical professionals. Thanks to everyone who stopped by our stand!



Heather Anderson at SCONe's stand. SOC November 2024.

EYECARE

SCONe team members will be attending the **Eyecare Glasgow Conference** this month.

Visit us at our stand and find out how to unlock the potential of the retinal images captured in your optometry practice.

We hope to see you there!

Details:

Sunday 19th - Monday 20th January
Hilton Hotel, Glasgow

[Eyecare Event Details](#)



SCONe FEATURES

SCONe has been featured in the recent **“Sudlow Review”** of the **UK health data science landscape**, commissioned by the Chief Medical Officer for England, the UK National Statistician and NHS England’s National Director for Transformation.

Find us on page 75 of the full report titled **'Uniting the UK's Health Data: A Huge Opportunity for Society'**.

[Read the Sudlow Review](#)



TAKE PART IN SCONe

Unlock the potential of retinal images **captured in your practice**: register your interest or request more information about the project.

Click the link below to **fill out our online form** and a member of the SCONe team will get in touch at a time that suits you. Alternatively, you can email us at **scone@ed.ac.uk** .

[Register with SCONe](#)

If you know any optoms who may be interested in SCONe, please share our contact details with them.

