

The Alan Turing Institute

Data Study Group Summary: PLORAS

16-20 April 2018

Predicting language outcome
recovery after stroke



Executive summary

Globally, stroke is the third most common cause of disability. One third of stroke survivors leave hospital with complex difficulties with communicating and understanding language, both written and spoken. This is known as aphasia or dysphasia.

The PLORAS (Predicting Language Outcome Recovery After Stroke) project constitutes a database of stroke survivors' post-stroke structural MRI scans, as well as their demographic and behavioural data (Seghier et al., 2016).

The aim of the PLORAS project is to empower both stroke survivors and clinicians with high quality predictive information. The PLORAS database was set up with the primary aim of creating a clinical prediction tool for patients and clinicians which would provide:

- Individualised predictions about the most likely course of recovery;
- Duration of recovery, and;
- Expected degree of recovery.

The prediction tool would not only provide patients with greater insight into their post-stroke recovery, but would also allow clinicians to create better personalised treatment plans for each individual stroke survivor.

To date, the PLORAS collaborators have attempted several modelling methods for both feature extraction, and predictive modelling, spanning classical linear statistical models to more complex deep learning methods (Hope et al., 2013, Aguilar et al., 2018, Hope et al., 2018).

Follow on and impact

- NeurIPS paper submitted and accepted that was developed from April 2018 DSG, Ploras project. Authors were the challenge owner along with some of the participants from the group.
 - <https://arxiv.org/abs/1811.10520>
- Machine Learning for Health (ML4H) Workshop at NeurIPS 2018
 - <https://arxiv.org/abs/1811.07216>

Contributors

The PLORAS exploration team at DSG were continually supported by Dr. Thomas Hope from the PLORAS project.

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- **Michael Ferguson** is a postdoctoral fellow at Beth Israel Deaconess Medical Center (a Harvard Medical School teaching hospital) in Boston, Massachusetts
- **Liam Kelleher** (facilitator for the group) is a final year PhD student at Swansea University
- **Conrad Koziol** is a Postdoctoral Research Associate at the University of Edinburgh
- **Kai Tyng Loh** works in a global analytics role at a tech company. She graduated from University College London (UCL) with a degree in Natural Sciences (Synthetic Organic Chemistry and Environmental Biology)
- **Griffith Rees** has a Sociology DPhil from Oxford University's Sociology Department
- **Yusuf Roohani** works as a data scientist in drug discovery research at GlaxoSmithKline in Cambridge, MA.
- **Noor Sajid** is a first year neuroscience PhD student at UCL
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