

# National Industry PhD Program: Data-Efficient Transformers: Effective Training from Small Datasets

**Adelaide University and Commonwealth Bank of Australia (CommBank) invite applications for this industry PhD project, advancing the understanding and practical capabilities of transformers trained on small datasets.**

## Program overview

### Degree

Doctor of Philosophy

### Research area

Mathematics

Computer Science

### Academic supervisor

Professor Simon Lucey

### Industry partner

Commonwealth Bank of Australia

### Expected commencement

2026

## The successful candidate will receive:

- Admission to a PhD program at Adelaide University;
- An Adelaide University Research Scholarship for 4 years, paid at \$53,635 p.a., and a tuition fee waiver;
- Supervision from research specialists at Adelaide University and CommBank;
- Industry embedment with CommBank; and
- Access to professional development opportunities through the University's Graduate Research and Innovation Training program.

## Project Description

Transformers have revolutionised fields with access to large datasets. However, their performance degrades significantly in domains with limited data, creating a barrier to innovation in many scientific and industrial settings. This project will advance the understanding and practical capabilities of transformers trained on small datasets. Building on structured initialisation techniques that incorporate inductive bias, we will refine these methods and explore novel attention mechanisms that allow more flexible representations in low-data regimes.

The project will deliver theoretical insights and tools to extend transformer applicability beyond internet-scale datasets, including:

- Development of small-data learning methods through structured initialisation and alternative attention mechanisms.
- Deeper understanding of inductive bias in transformer design.
- Prototype architectures and open-source software
- Benchmark datasets and evaluation protocols for low-data transformer performance.

This research will reduce reliance on costly data collection, enabling high-performance AI in healthcare, environmental monitoring,



defence, and manufacturing, positioning Australia as a leader in data-efficient machine learning.

This project will be undertaken in collaboration with Simon Lucey of the School of Computer Science and Information Technology, and research specialists at CommBank. The student will be located at the CommBank Centre for Foundational AI Research at the Australian Institute of Machine Learning, Adelaide University city campus.

## Eligibility Requirements

This opportunity is open to both domestic and international students who can meet the requirements for PhD admission at Adelaide University (including English language proficiency in the relevant academic area), and who can demonstrate suitable academic experience in Mathematics or Computer Science (through a high-

quality Honours or Master's degree). Selection criteria include:

#### **Academic Qualifications**

- Completion of a four-year undergraduate degree in Mathematics or Computer Science (Honours), or a Master's degree in Mathematics or Computer Science.

#### **Research Experience**

- Demonstrated ability to conduct research in Artificial Intelligence.
- Highly desirable: publications in AI-relevant conferences or journals.

In addition, the successful applicant should be able to demonstrate the following attributes:

- Foundational knowledge in machine learning and deep learning.
- Proficiency in programming languages such as Python and C++, with some experience using relevant tools and frameworks.

The successful candidate must be able to enrol as a full-time PhD student at the University in the year of the offer. They must remain based in Adelaide, South Australia for the duration of the award.

Students that have previously completed a PhD program are, unfortunately, ineligible for the National Industry PhD Program.

#### **Application Process**

To apply, please email the following documents to CommBank Centre Manager Rosa Pearson ([rosa.pearson@adelaide.edu.au](mailto:rosa.pearson@adelaide.edu.au)) with the subject line 'National Industry PhD Program application':

- CV
- Cover Letter (of not more than 2 pages) outlining your interest in the PhD project and describing how your background and research area align with the project
- Degree certificates and relevant academic transcripts, with translations of non-English documentation

Applications close on **27 February 2026**. Please note that applications will be shortlisted on a rolling basis, and the scholarship advertisement may be withdrawn early if a suitable candidate is identified.

#### **About the National Industry PhD Program**

The National Industry PhD Program is an Australian Government initiative to enhance workforce mobility among graduate researchers, and to promote knowledge transfer between academia and industries across all areas. PhD candidates under this program are connected with academic supervisors and industry-based researchers, to co-design innovative, applied research projects. Through their doctoral candidature, students will experience research in both university and industry settings, and undertake specialised training in research translation and commercialisation.

#### **Enquiries**

For further information about the National Industry PhD Program, or research degrees at Adelaide University, please contact the [Adelaide University Graduate Research School](#)