UNIVERSITY OF TORONTO
OISE | ONTARIO INSTITUTE
FOR STUDIES IN EDUCATION

Code: **Ji**

APD1210 RESEARCH PRACTICUM COURSE

PROJECT DESCRIPTIONS 2025-26

FALL/WINTER

Name and Title: Feng Ji, Ph.D.

Lab Website: https://www.feng-ji.org/

TITLE OF RESEARCH PROJECT: *Computational Psychometrics and Trustworthy AI*

NUMBER OF STUDENT PLACES AVAILABLE: *1-2 (tentatively)*

PRIMARY MODE OF RESEARCH PLACEMENT PARTICIPATION (circle one option and describe):

___IN PERSON *___REMOTE (ONLINE)* *_X__ FLEXIBLE*

Please describe:

OBJECTIVES AND METHODOLOGY: My work has been focused on developing, evaluating, and applying advanced statistical and machine learning methods in educational and psychological research. Current on-going projects include applications of advanced stats/machine learning methods to psych/edu data; evaluating ChatGPT's impact on research methods; proposing new machine learning methods to handle multimodal data (e.g., text); developing new methods to better understand population heterogeneity in child development; evaluating educational and psychological measurement using both traditional psychometrics and network psychometrics; developing R/Python packages for open and reproducible science; multimodel assessment of mental health; methodological approaches to improve AI trustfulness; handling missing data using machine learning. Specific project will be determined and tailored to practicum student(s)' background and interests.

DESCRIPTION OF STUDENT PARTICIPATION:

- Conduct literature review.
- Perform data cleaning, coding, management, quality control, archiving, and documentation.
- Carry out data analyses using standard descriptive and inferential statistics, including statistical modelling and machine learning (training available if needed).
- Prepare and present results of analyses for review by investigators and collaborators, and contribute to the discussion and interpretation of findings.

- Support manuscript development, for example by searching for relevant literature, drafting sections, preparing tables and figures, and providing bibliographic support.
- Support other shared duties related to project coordination and administration (e.g. coordinate data requests, help with progress reports).
- Conduct simulation studies.

DESCRIPTION OF PREFERRED SKILLS/BACKGROUND (OPTIONAL):

- Strong motivation to overcome challenges encountered while conducting research
- Strong interests in leveraging advanced quantitative methods and machine learning techniques in education and psychology.
- Willing to acquire technical knowledge, including machine learning and statistical learning theories, computational and programming skills (e.g., R, Python), and engage in technical writing and programming.
- Knowledgeable in research design and statistics, including regression analysis, multilevel models, and ideally basic machine learning.

DAY AND TIMES OF LAB MEETINGS: *TBA.*