Parham Vatankhah

Adelaide, Australia | +61 493 332 520 | LinkedIn | vatankhah.parham@gmail.com

---

PROFESSIONAL SUMMARY

PhD researcher with strong experience in Python automation, quantitative modelling, and analysis of complex datasets in a high-rigor research environment. Built reproducible computational workflows, automated data processing pipelines, and publication-grade analysis for large simulation studies, with a strong focus on validation, documentation, and clear communication of results.

CORE SKILLS

- Data analytics & problem-solving: data analysis, trend identification, hypothesis-driven investigation, root cause analysis, validation, and evidence-based decision-making
- Programming & data tools: Python, SQL, MATLAB, Jupyter Notebook, Git/GitHub, Bitbucket
- Data workflow & automation: Python automation, reproducible pipelines, data cleaning, structured post-processing, workflow optimisation, technical documentation
- Data modelling & transformation: transforming raw technical outputs into structured datasets for analysis, visualisation, and reporting; experience working with large multi-parameter and time-resolved data
- Machine learning & research computing: exposure to machine learning workflows, numerical modelling, feature-focused analysis, and experimentation in notebook-based environments
- Visualisation & reporting: scientific visualisation, figure generation, results presentation, and communicating technical findings to varied stakeholders
- Technical platforms: ANSYS Fluent/CFX, COMSOL Multiphysics, SimVascular, SolidWorks, AutoCAD; working knowledge of Excel; actively developing Power BI and broader analytics engineering tooling
- Collaboration & communication: technical writing, stakeholder communication, mentoring, presentation, and cross-disciplinary collaboration

EXPERIENCE

The University of Sydney — PhD Researcher (Engineering)

Computational Fluid Dynamics & Cardiovascular Haemodynamics | Sydney, Australia | 2022–Present

- Conduct patient-specific and idealised CFD studies of thoracic aortic flow to quantify hemodynamic indices and flow patterns.
- Develop Python workflows for simulation setup, post-processing, and figure generation to improve reproducibility and throughput.
- Perform verification analyses (mesh/time-step sensitivity) and document modelling assumptions for publication-quality results.

The University of Sydney — Ju Lab

Remote Research Intern | Sydney, Australia | Jan 2020 – Jun 2022

- Ran numerical simulations in haemodynamics and microfluidics, including non-Newtonian blood modelling and entrance-region effects.
- Helped establish computational infrastructure for the lab (workstation specification, software installation).
- Supported manuscript preparation and peer-review activities; presented progress regularly in group meetings.

Sharif University of Technology — Shafii's Lab

Research Assistant (Part-time) | Tehran, Iran | Oct 2019 – Mar 2020

- Simulated ferrofluid droplet formation under AC/DC fields using ANSYS Fluent and COMSOL Multiphysics.
- Assisted microfluidic device fabrication and supported students with analysis and paper revisions.

Sharif University of Technology — Chabok's Lab

Research Assistant (Part-time) | Tehran, Iran | Mar 2019 – May 2019

- Modelled thermal behaviour of a HIFU probe in COMSOL to support development of a thermosensitive liposome therapeutic concept.
- Coordinated interdisciplinary collaboration across engineering, biology, and medicine.

Shezan Innovation & Acceleration Company — Microfluidics Group

Research Assistant (Part-time) | Pardis, Tehran, Iran | Jan 2017 – Oct 2018

- Reviewed flow-metering methods (thermal, ultrasonic, mechanical) and designed a thermal microfluidic flow meter.
- Performed coupled numerical design iterations in ANSYS Fluent and COMSOL.

Harvard University — Shafiee & Weitz Labs (Remote)

Research Assistant (Part-time) | Remote (Tehran, Iran) | Jan 2018 – Mar 2018

- Simulated bubble-propulsion Janus microparticles to support lab research under external supervision.

Sharif University of Technology — Shamloo's Lab

Research Assistant (Part-time) | Tehran, Iran | Dec 2015 – Jan 2017

- Set up and prepared a cleanroom environment for microfabrication and calibrated soft-lithography equipment.
- Fabricated microfluidic devices via soft-lithography and mentored undergraduate and graduate students.
- Supported manuscript review and pre-submission editing within the lab.

EDUCATION

The University of Sydney

PhD, Engineering | Sydney, Australia | 2022–Present

- Dissertation: Characterising flow in normal and diseased human aorta using computational fluid dynamics (CFD).
- Supervisors: Prof. David Fletcher; Prof. Stuart Grieve; Dr. Xinying Liu.

Sharif University of Technology

MSc, Mechanical Engineering (Energy Conversion) | Tehran, Iran | 2013–2016

- Dissertation: Simulation, design, and fabrication of a passive microfluidic device for circulating tumour cell separation.
- Supervisor: Prof. Amir Shamloo.

University of Tehran

BSc, Mechanical Engineering | Tehran, Iran | 2009–2013

- Dissertation: Sizing turbofan engines of airliners.
- Supervisor: Prof. Amir Nejat.

SELECTED PUBLICATIONS

- Wang H.J., Wang Y., Mirjavadi S.S., Andersen T., Moldovan L., Vatankhah P., et al. Nature Communications (2024).
- Zhang Y., Aye S.S.S., Cheng V., Nasser A., Hong T., Vatankhah P., et al. Advanced Materials Interfaces (2023).
- Zhao Y.C., Vatankhah P.†, Goh T., Michelis R., et al. Scientific Reports (2021).
- Zhao Y.C., Vatankhah P.†, et al. Molecular & Cellular Biomechanics (2021).
- Vatankhah P., Shamloo A. Analytica Chimica Acta (2018).
- Shamloo A., Vatankhah P., Akbari A. Chemical Engineering and Processing: Process Intensification (2017).

For complete list, see Google Scholar Profile.

AWARDS & DISTINCTIONS

- **Faculty of Engineering Research Scholarship**, The University of Sydney (USYD).
- **Yuan-Cheng Fung Best Paper Award (Molecular & Cellular Biomechanics / Tech Science Press)** — for *Computational Fluid Dynamics Simulations at Micro-Scale Stenosis for Microfluidic Thrombosis Model Characterization*.
- **National Elite Foundation (Iran)** — Member (since 2016).
- **Nationwide MSc Entrance Exam (Mechanical Engineering, Iran)** — ranked **1st–3rd across all subjects** among **22,000+** candidates; **tuition-fee waiver scholarship**, **Sharif University of Technology** (2012).
- **Nationwide BSc Entrance Exam (Mathematics & Physics, Iran)** — ranked **~200** among **200,000+** candidates; **tuition-fee waiver scholarship**, **University of Tehran** (2008).
- **Nationwide Undergraduate Olympiad (Mechanical Engineering, Iran)** — ranked **4th** among nominated undergraduates.
- **Nationwide PhD Entrance Exam (Mechanical Engineering, Iran)** — ranked **29th**.

TEACHING

- Teaching Assistant, Computational Fluid Dynamics (MSc), Sharif University of Technology (2016).
- Teaching Assistant, Principles of Biological Engineering (MSc), Sharif University of Technology (2016).
- Teaching Assistant, Advanced Fluid Mechanics I (MSc), Sharif University of Technology (2015).
- Teaching Assistant, Fluid Mechanics I (BSc), Sharif University of Technology (2015).
- Teaching Assistant, Advanced Mathematics II (PhD), Sharif University of Technology (2014).

ADDITIONAL

- Languages: Farsi (native), Azeri (native), English (fluent; TOEFL iBT 110/120, 2022).