Jul 2017 - Jul 2021

Dec 2021 - May 2023

# PERSONAL DETAILS

Mailjain@cs.uni-saarland.deWebpagehttp://fai.cs.uni-saarland.de/jain/index.html

### EDUCATION

#### Bachelor of Advanced Computing(Hons) (6.467 GPA)

Australian National University(ANU), Canberra

This degree has helped me develop my problem solving skills and work effectively as part of a team. I have also specialized in Machine Learning. Through the many research projects done in my degree, I have been exposed to the latest research in various fields like AI, Blockchain and Logic.

### Preparatory Phase (1.6 GPA)

Graduate School of Computer Science, Saarbrucken, Germany

As part of the program, I took a breadth of courses ranging from Theoretical Computer Science to Artificial Intelligence and Software Engineering. I was funded by the IMPRS-TRUST scholarship program throughout my program of study.

## WORK EXPERIENCE

#### 1. Student Ambassador Eob 2018 Jun 2021

Feb 2018-Jun 2021College of Engineering and Computer Science, ANUServed as a Student Ambassador at ANU, engaging with prospective and current students<br/>to share academic and campus experiences. Assisted in organizing university events and<br/>supported outreach initiatives both on campus and in regional areas outside Canberra

### 2. Casual Sessional Academic

Feb 2021-Jun 2021College of Engineering and Computer Science, ANUAs a tutor, I facilitated classes on core concepts in Logic. Focused on identifying student<br/>concerns, interpreting complex questions, and breaking down abstract topics into accessible,<br/>comprehensible explanations.

# **RESEARCH EXPERIENCE**

#### 1. Formalized Proof Search for BiIntuitionistic Logic Dec 2019 - Jul 2021

ec 2019 - Jul 2021 Prof. Rajeev Gore, ANU Developed a cut-free linear nested sequent calculus for Bi-Intuitionistic Logic as part of my undergraduate thesis. Proved soundness and completeness of the calculus via backward proof search, formalized and mechanized using the Coq proof assistant.

#### 4. Formalizing SCL calculi for Ground First order clauses

Jan 2022 - Jul 2022 Prof. Christoph Weidenbach, MPI-INF Analyzed whether Superposition reasoning can be simulated by SCL calculi, which are based on non-redundant clause learning; results published at CADE 2023.

3. Safety Verification of Tree-Ensemble Policies via Predicate Abstraction June 2023 - Present Prof. Joerg Hoffmann

Explored the trade-off between policy quality and verifiability in tree ensemble and neural network representations of action policies. Used imitation learning to distill pretrained neural

network policies into tree ensemble policies. Applied specialized SMT solvers—Marabou for neural networks and Veritas for tree ensembles—to verify safety within a policy predicate abstraction framework. This work was published at ECAI 2024.

# **RESEARCH REFERENCES**

Available upon request