Abhijeet Krishnan

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Education

North Carolina State University — Raleigh, NC, USA
PhD, Department of Computer Science — *Jan 2018 - May 2024 (expected)*

- Advised by: Dr. Arnav Jhala, Dr. Chris Martens
- Thesis (planned): Interpretable Strategy Synthesis for Competitive Games

North Carolina State University — Raleigh, NC, USA
Master of Science in Computer Science — *Jan 2018 - Dec 2020*

Visvesvaraya National Institute of Technology — Nagpur, MH, India
Bachelors of Technology, Department of Computer Science and Engineering — *Aug 2013 - May 2017*

- Thesis: Natural Language to Structured English Translation: A Comparative Study of Machine Translation Approaches

Work Experience

TCS Research — Remote
Intern — *June 2023 - Aug 2023*

- Researched the applicability of the decision transformer model to the problem of synthesizing programmatic policies
- Open-sourced a Python package to enable reproducible benchmarking

Zynga Inc. — Remote
Data Science Intern — *May 2021 - Aug 2021*

- Extended a game-description language to enable expressing **four** new game modes in the mobile game Spell Forest
- Redesigned an internal simulator framework used by a team of **10** people for scalability and generality

Principles of Expressive Machines (POEM) Lab — Raleigh, NC, USA
Graduate Research Assistant — *Jan 2019 - Dec 2019*

- Invented a rule-based model for predicting player skill that could be learned from gameplay traces
- Invented a learning algorithm that outperformed a SOTA algorithm at the task by **40%**

Knexus Research Corp. — National Harbor, MD, USA
AI Intern — *June 2019 - Aug 2019*

- Developed a proof-of-concept for an automated planning-based system for generating children's stories using a novel story graph generation algorithm

Goldman Sachs — Bengaluru, KA, India
Summer Employee — *May 2016 - Aug 2016*

- Developed and tested a patch for a bug in a critical 1500+ line C++ codebase
- Developed a real-time dashboard to monitor server statistics in JavaScript and PHP
- Won Codebreak 2016, an internally-held coding contest for interns

Publications

- **Krishnan, Abhijeet** and Chris Martens. “Synthesizing Chess Tactics from Player Games.” In *Workshop on Artificial Intelligence for Strategy Games (SG) and Esports Analytics (EA), 18th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*. 2022 (in press).
- **Krishnan, Abhijeet** and Chris Martens. “Towards the Automatic Synthesis of Interpretable Chess Tactics.” In *Explainable Agency in Artificial Intelligence Workshop, 36th AAAI Conference on Artificial Intelligence*. 2022.
- **Krishnan, Abhijeet**, Aaron Williams, and Chris Martens. “Towards Action Model Learning for Player Modeling.” *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*. Vol. 16. No. 1. 2020.
- **Krishnan, Abhijeet** and Chris Martens. “Rule-based Cognitive Modeling via Human-Computer Interaction.” Poster presented at: *5th LAS Research Symposium*; 2019 Dec 10; Raleigh, NC.

Academic Service and Involvement

Reviewing and Program Committee Membership

- International Conference on Foundations of Digital Games *2022*
- AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment *2021-22*
- IEEE Conference on Games *2019-22*
- AAAI Experimental AI in Games, AIIDE Workshop *2020*
- IEEE Symposium Series on Computational Intelligence *2020*

Projects

Fanorona AEC Engine

- Implemented a software library to train RL agents to play the board game Fanorona
- Featured as a third-party environment on the official documentation for the PettingZoo library

Player Modelling using Gameplay Video Classification

- Developed a player modeling technique based on gameplay video classification that achieved a **93%** test accuracy

Procedural Terrain Generation

- Developed a procedural terrain generator with texture generation using Perlin noise in TypeScript and WebGL

Skills

Machine Learning Neural networks deep learning game AI reinforcement learning offline RL transformer model

Languages Python C C++ Rust JavaScript Prolog

Applications git Linux Figma

Libraries PyTorch TensorFlow numpy pandas Gymnasium PettingZoo SvelteKit