

ANURAG SARKAR

✉ sarkar.an@northeastern.edu | 🌐 Personal Site | 🎓 Google Scholar | 🐙 Github | 🔗 LinkedIn | 📄 Full CV

EDUCATION

Northeastern University

PhD, Computer Science 9/2016-8/2023
Thesis: Learning Latent Representations for Controllable Combinational Creativity and Game Design

MS, Computer Science 9/2016-5/2018

St. Xavier's College (Autonomous), Kolkata, MSc, Computer Science 2014-16

West Bengal University of Technology, Bachelor of Computer Applications (BCA) 2011-14

EXPERIENCE

Microsoft Research, Research Intern, MSR New York City 5/2023-8/2023

- Worked on a vision transformer-based architecture for learning player style representations and style-based generative models of player actions in chess

Technologies: Python, PyTorch, Tensorflow/Keras, AzureML

Electronic Arts, Gameplay Software Engineer Intern, EA Tiburon 9/2022-12/2022

- Trained supervised ML models (XGBoost/neural networks) for accelerating AI QB decision-making/passing in *Madden NFL*

- Built interactive tools for visualization of model predictions based on user inputs

Technologies: C++, Python, PyTorch, Streamlit, Bokeh, Perforce

Northeastern University, Teaching Assistant

DS4400: Machine Learning 1 1/2023-4/2023

- Intro ML course covering regression, classification, clustering, decision trees, random forests and deep learning

- Answered student questions online, held office hours and graded assignments

DS3000: Foundations of Data Science

5/2022-6/2022

- Intro data science course in Python covering the use of `pandas`, `numpy`, `matplotlib` and `scikit-learn`

- Performed code walkthroughs for weekly class assignments, held office hours and graded assignments

Zynga, Data Science Intern, Applied AI

5/2021-8/2021

- Extended existing game description language to support new mechanics for the puzzle game *Spell Forest*

- Worked on refactoring simulation framework, focusing on interfacing with different gameplay agents

Technologies: Unity/C#, JSON, Python

Northeastern University, Research Assistant

9/2016-5/2021, 8/2021-4/2022

- Procedural content generation and generative game design tasks via machine learning, using variational autoencoders (VAE)

- Dynamic difficulty adjustment via matchmaking using PVP rating systems and skill chains, funded by the NSF [link]

Tech: Python, Unity/C#, R, PyTorch, Jupyter, Google Cloud, Amazon MTurk, AWS DynamoDB, Javascript, HTML/CSS

SELECTED PUBLICATIONS

A. Sarkar, S. Cooper: *Latent Combinational Game Design* TOG 2023

A. Sarkar, S. Cooper: *tile2tile: Learning Game Filters for Platformer Style Transfer* AIIDE 2022

A. Sarkar, S. Cooper: *Procedural Content Generation using Behavior Trees (PCGBT)* EXAG 2021

A. Sarkar, S. Cooper: *Generating and Blending Game Levels via Quality-Diversity in the Latent Space of a VAE* FDG 2021

Z. Yang, A. Sarkar, S. Cooper: *Game Level Clustering and Generation using Gaussian Mixture VAEs* AIIDE 2020

A. Sarkar, S. Cooper: *Towards Game Design via Creative Machine Learning (Best Paper Nomination)* COG 2020

A. Sarkar, *Game Design using Creative AI* NeurIPS MLCDD 2019

A. Sarkar, S. Cooper: *Using a Disjoint Skill Model for Game and Task Difficulty in HumanComputationGames* CHI Play 2019

A. Sarkar, S. Cooper: *Transforming Game Difficulty Curves using Function Composition* CHI 2019

A. Sarkar, Z. Yang, S. Cooper: *Controllable Level Blending between Games using Variational Autoencoders* EXAG 2019

A. Sarkar, M. Williams, S. Deterding, S. Cooper: *Engagement Effects of Player Rating System-based Matchmaking for Level Ordering in Human Computation Games (Best Paper Honorable Mention)* FDG 2017

SKILLS

Programming Languages: Python, C++, C#, Java, R, Javascript, SQL

Misc: PyTorch, Tensorflow/Keras, Unity, Jupyter, Git, HTML/CSS, Streamlit, Google Cloud Platform, Amazon MTurk, AWS

SELECTED HONORS & AWARDS

Outstanding Graduate Student Award in Research Nomination, Northeastern University 2022, 2023

Graduate Thesis/Dissertation Research Grant, Northeastern University 2021-23

IEEE Computational Intelligence Society (CIS) Grant, IEEE Conference on Games 2019, 2020

Father Jacques de Bonhome S.J. Memorial Gold Award, MSc. Computer Science Class of 2016 Valedictorian 2016

NSHM Medal of Merit, BCA Class of 2014 Valedictorian 2014