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Akash Saravanan

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Work Experience

- **Applied Research Intern** — Jan 2023 - Present
  Georgian Partners — *Toronto, Canada*
  - Developed ChatGPT-like models using Reinforcement Learning from Human Feedback (RLHF).
  - Utilised OpenAI, PaLM and HuggingFace APIs to build prompt tuning examples for a Generative AI Boot Camp.
  - Led applied research on analyzing 34M blockchain transactions using graph ML and analytical techniques.
  - Refactored a two year old multi-modal machine learning toolkit to support newer versions of libraries.
  - **Tech Stack:** Python, PyTorch, Pytorch Geometric, Tranformers, LangChain, GCP, Git
- **Graduate Research Fellow** — May 2021 - Dec 2022
  University of Alberta — *Edmonton, Canada*
  - **Meta Discovery for Game Balance:** Designed a reinforcement learning system to evaluate game balance.
  - **Debiasing Language Models:** Developed a framework, as a team of 3, to debias transformer models (BERT).
  - **Pixel VQ-VAE:** Introduced a novel model to learn pixel art embeddings for image generation & transformation.
  - **Tech Stack:** Python, PyTorch, Tensorflow, Transformers, Git
- **Machine Learning Engineer** — Aug 2019 - Nov 2020
  Mad Street Den (Vue.ai) — *Chennai, India*
  - Trained language models (BERT, XLNet, USE) for classification and entity extraction.
  - Created an end-to-end config-driven framework for rapid prototyping of production-ready NLP models.
  - Upgraded existing systems using ML to boost precision by 15% & optimized the codebase to reduce latency by 40%.
  - Developed an experimental Sequence-to-Sequence model to generate retail product descriptions.
  - Extracted keywords from 37 million retail products using a custom algorithm that combined NPMI and TF-IDF.
  - Implemented Word2Vec across a dataset of 2 million retail product descriptions.
  - **Tech Stack:** Python, PyTorch, Tensorflow, Keras, Transformers, Django, Javascript, AWS, GCP, Git

Education

- **University of Alberta** — Jan. 2021 – Dec. 2022
  Master of Science (Thesis) in Computing Science; CGPA: 3.75/4.0 — *Edmonton, Canada*
  - **Thesis:** Visualizing Characters and Evaluating their Balance in Competitive Video Games.
- **Anna University (Sri Venkateswara College of Engineering)** — Jun. 2015 – Apr. 2019
  Bachelor of Engineering in Computer Science and Engineering; First Class. — *Chennai, India*
  - **Thesis:** Natural Language Generation using Generative Adversarial Networks (Awarded grant of INR 10,000)

Programming Skills

- **Languages & Databases:** Python, MySQL, SQLite, MongoDB, HTML, CSS, Javascript, Markdown
- **Frameworks & Libraries:** PyTorch, Tensorflow, Keras, Transformers, LangChain, NumPy, Pandas, scikit-learn.
- **Tools & Technologies:** Git, LaTeX, Amazon Web Services (AWS), Google Cloud Platform (GCP)

Publications

- **A Framework for Predicting the Impact of Game Balance Changes through Meta Discovery:** First author. Under review.
- **FineDeb: A Debiasing Framework for Language Models:** Co-first author. AI4SG Workshop, AAAI 2023.
- **Pixel VQ-VAEs for Improved Pixel Art Representation:** First author. EXAG Workshop, AIIDE 2022.
- **Facial Emotion Recognition using Convolutional Neural Networks:** First author. AICV 2018.

Selected Projects

- **Homebrew Helper:** Developed & deployed a Discord bot for online role-playing games with database connectivity.
- **[Open Source] Multimodal Toolkit:** Updated 2-year old codebase, added tests, resolved bugs & 10+ issues.
- **[Open Source] poke-env:** Identified & fixed several bugs, added example code.