Akshay Kumar Sureddy

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Education

University of Massachusetts Amherst | MS in Computer Science | CGPA: 4.0/4.0 **Sep 2023 - May 2025**
Coursework: Intelligent Visual Computing, Algorithms for DS, Reinforcement Learning, NLP

Professional Experience

Recursion | **Internship**: Software Engineer Intern - Industrialized Workflow **May 2024 - Present**

- Working on the Unification of drug discovery pipelines to achieve high throughput and efficiency.
- Built APIs for CRUD operations on the Google Cloud BigQuery database using Python and fastAPI.
- Built Python functionalities for Prefect and Camunda orchestration platforms to achieve end-to-end automation of program.

Morgan Stanley | **Internship**: Spring Analyst - Wealth Management Technology **Jan 2023 - Jul 2023**

- Collaborated with the research unit to develop a strategic XGBoost model for identifying potential client attrition and discerning underlying reasons for optimal retention strategies.
- Developed a comprehensive service, integrating Angular UI with Hadoop, to deliver model results to financial advisors.
- Achieved an impressive AUC of 0.84 in predicting client churn for 16 million clients in 2021.

Morgan Stanley | **Internship**: Summer Analyst - Wealth Management Technology **May 2022 - Jul 2022**

- Developed a Snowflake-Java POC for Analytics Hub, assessing Snowflake's viability as backend for financial reporting.
- Enhanced system efficiency by optimizing SnowSQL queries, resulting in a 10% faster response time and a 30% reduction in infrastructure costs compared to the previous SOLR architecture.

Crosscope | **Internship**: Data Science (Computer Vision) **May 2021 - Feb 2022**

- Engineered a pipeline to quantify cancerous nuclei in lung Whole Slide Images(WSIs). Deployed the pipeline on AWS Step - Lambda functions, to efficiently address pathologists' requests, reducing slide review time by 40%.
- Developed a compressed version of CLAM - Lymph node Cancer detection model by training it on 20x WSI, reducing the model inference time by 50%. Deployed the model as a serverless API service on AWS API gateway - Lambda functions.

Projects & Research Experience

Transformers based 3D Object Tracking in Self Driving Cars | Guide: Dr. Evangelos **Feb 2024 - May 2024**

- Developed a LiDAR Point cloud to 3D Bounding Box detection model for Perception in Autonomous vehicles.
- Built an architecture with PointNet++ as feature extractor, Transformers (Vision) as Template-Search feature augmentor and Region Proposal Network (RPN) from Point-to-Box for bounding box proposal generation.
- Achieved SOTA mean success/precision score of 66/46 in tracking car/pedestrian/cyclist/van compared to 60/42 of P2B.

Human Pose Estimation | **IISc Banglore - Internship** - Guide: Dr. Arjun Jain **May 2021 - Aug 2021**

- Built a pipeline that estimates the texture and pose of a person from RGB image using Unsupervised ML techniques.
- Implemented CNN-based Autoregessive network and used the SMPL 3D mesh generation model for pose detection.
- Attained a masked-SSIM score of 0.84 on the Market1501 benchmark dataset, showcasing high fidelity in 3D pose analysis.

Hindi Handwritten Text Recognition | Master's thesis, IIT Dhanbad **Aug 2021 - Apr 2023**

- Developed a innovative product capable of converting handwritten images into electronic Hindi text, resulting in a 40% increase in accessibility and efficiency for users.
- Constructed a character-level word recognition model using Bi-directional LSTMs and CNNs, integrated with paragraph segmentation and Levenshtein word corrector models. Attained 86% accuracy on the IIIT-HW-Dev benchmark dataset.

LLM Alignment Toward Human Preferences | Guide: Dr. Mohit Iyer **Feb 2024 - May 2024**

- Worked on aligning smaller LMs toward Human Preferences through Knowledge distillation from Larger LMs.
- Employed Parameter Efficient Fine Tuning methods like LoRA and QLoRA to efficiently train the LMs with fewer parameters
- Worked on training LMs using Dynamic Preference Optimization for Human alignment on Toxicity and Helpfulness

Knibble.ai - Create AI Powered Knowledge Bases & Chatbots | Co-founder **Jun 2023 - Sep 2023**

- Launched https://knibble.ai/, a dynamic knowledge management tool facilitating text, PDF, and web URL queries.
- Developed an end-to-end RAG system and embeddable chatbot, integrating LLMs for enhanced content retrieval.
- Attained rapid user adoption, with 5000 users in first two months, selected for the prestigious AppSumo class of 2023.

Deep RL Algorithms Implementation and Evaluation | Guide: Dr. Bruno C da Silva **Nov 2023 - Dec 2023**

- Implemented Reinforce with baseline, Semi-Gradient N-step SARSA, and Deep Q-Learning algorithms.
- Incorporated neural networks for policy and value functions. Conducted comprehensive evaluations of these algorithms on Cartpole, Acrobot, and custom Autonomous toy car environments, performing in-depth analysis.

Skills

- **Languages:** C, C++, Python, R, SQL, NoSQL | Familiar: Java, Scala, JavaScript, Typescript
- **Softwares/ Frameworks:** AWS, Flask, Angular, Hadoop, GCS, Prefect, Camunda | Familiar: Snowflake, Springboot
- **Tools/ Libraries:** Linux, Scikit Learn, Tensorflow, Pytorch, Computer Vision, Pyspark | Familiar: Excel, Dashboard.

Certification

- AWS certified Solutions Architect Associate.
- Coursera - Visual Perception for Self Driving Cars.
- Coursera - Motion Planning for Self-Driving Cars.
- IIT Dhanbad - Image and Video Processing.