Sivaramakrishnan Subramanian

Seeking Summer 2023 Internship in Computer Vision

📞 (571) 352-0457 | ✉ sivarams@cs.cmu.edu | 🏛 Site | 💼 LI | 🎓 Scholar

Education

Carnegie Mellon University, Robotics Institute   **Pittsburgh, PA**
Master of Science in Computer Vision   *Dec 2023*
Coursework: Adv. Computer Vision, Mathematical Fundamentals for Robotics, Machine Learning

Anna University, SSN   **Chennai, IN**
Bachelor of Engg. in Electrical Engineering, GPA: 3.68/4.00   *May 2018*
Coursework: Digital Signal Processing, OOP, Adv. Control Systems, Adv. Calculus, Transforms & PDEs

Experience

Research Assistant, Xu Lab   School of Computer Science, CMU   *Aug 2022 - Present*

○ Investigating **controllable-GAN** pipelines with **self-supervision** for extraction of 3D object-aware representations from tomography images of Cryo-EM structures
○ Mentoring 2 interns in **unsupervised domain adaptation** for cell organelle detection in 3D tomogram slices

Senior Data Scientist, R&D Div   AppOrchid Inc   *Oct 2019 - Jul 2022*

○ Led an AI team of **12 members** at an enterprise AI company. Core team of ContractAI, a flagship contract-analysis product offering in CLM space pulling in **$34MM** in 2021
○ Synthesized a custom layout analysis model with **Yolo v4** backbone for extracting structural metadata; attained **0.73 mAP** on PubLayNet dataset and **8x** higher throughput than caffe2 baseline
○ Prototyped an analysis-by-synthesis pipeline for underline detection(**U-Net**) and signature detection (**spatial pyramid pooling**); shipped model had **0.93** precision on Tobacco800 dataset at **34 fps** with 15x speedup
○ Designed a cascade mask r-cnn model with **BiFPN fusion** for tabular structure extraction from financial documents; achieved **0.48 AP** on ICDAR-cTDaR task and reduced **latency by 3x** post FP-quantization
○ Built a **multi-modal learning** pipeline using **BERT** base-cased (ViLBERT) for clause hierarchy extraction with **0.83 F1** at 2 docs/min latency; model not deployed due to online inference constraints
○ Architected a **MLaaS framework** (ML-as-a-service) for in-loop development, training, deployment & serving

Computer Vision Engineer   Soliton Tech   *Jun 2018 - Oct 2019*

○ Developed a **KLT tracker** based perception pipeline from **GigE** Vision cameras to track air voids in industrial glass rods; deployed with **16 msec** latency in a **$2MM pilot** system for Corning Inc
○ Refined CRNN based sparse text detection for Medtronic's BIS sensory devices with **0.781 CER**
○ Optimized **stroke-width transform** algorithm using operator approximation for extracting font attributes; reduced inference time to **0.6 sec/page** from 40 sec

Technical Mentor   OpenMined   *May 2020 - Jul 2021*

○ Volunteered to mentor students on **Privacy Preserving ML**(PPML) fundamentals and codebases of *PySyft & PyGrid*, open-sourced PPML tools combining federated learning and differential privacy

Awards

○ Spot award: Employee of the Quarter (**EoQ**), AppOrchid Inc   **2021**
○ Spot award: **High Impact award**, Soliton Tech   **2018, 2019**
○ Granted **Research sponsorship** of INR 21,18,000 with thesis advisors (PI & Co-PI) by *Dept. of Science & Technology, Govt. of India*; directly resulted in a Best paper award at *Springer*   **2017**
○ Awarded **undergrad research grant** of INR 25,000 from SSN Trust (6 out of 38 student app.)   **2016**

Skills

○ **Languages**: Python, C++, MATLAB, LabVIEW
○ **Machine Learning Frameworks**: PyTorch, Tensorflow, JAX, Chainer
○ **Tools**: OpenCV, FFmpeg, REST API microservices, Docker, PostgreSQL, Django, AWS, CUDA, Git, XML