Sivaramakrishnan Subramanian

Seeking Summer 2023 Internship in Computer Vision
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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
- 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 real-time pipeline to track air voids in industrial glass rods using **GigE** Vision cameras in a team of 2; 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**
- Collaborated with thesis advisors on 2 EE undergrad primer books published by Pearson Ed **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, PostgreSQL, REST API microservices, Docker, Django, AWS, CUDA, Git, LaTeX, XML