Akshay Chandra Lagandula

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EDUCATION

- **Indira Gandhi National Open University** — Hyderabad, India
  Post-Graduate Diploma in Applied Statistics (Distance Course), 85%; — *July 2017 – June 2018*

- **Jawaharlal Nehru Technological University** — Hyderabad, India
  Bachelor of Technology in Computer Science & Engineering, 76% (Top 15/300); — *Aug 2013 – May 2017*
  - ○ **College**: Keshav Memorial Institute of Technology
  - ○ **Major Project**: An end-to-end placement management system with neural networks based placement recommendations and predictions.
  - ○ **Excelled In Courses**: Mathematics, Predictive Analytics, Big Data Analytics, Java Programming, Design And Analysis Of Algorithms, Operating Systems, Computer Networks.
  - ○ **Extracurricular**: Content developer at college's e-Magazine, captain of college's football team.

PUBLICATIONS[†]

1. **Akshay L Chandra**, S.V. Desai, Chaitanya DNSK, Vineeth N Balasubramanian. On Initial Pools for Deep Active Learning. Preregistration Workshop at NeurIPS 2020.

2. **Akshay L Chandra**, S.V. Desai, Vineeth N Balasubramanian, S. Ninomiya, Wei Guo. Active Learning with Point Supervision for Cost-Effective Panicle Detection in Cereal Crops. BioMed Central Plant Methods 2020. *[Impact Factor: 4.5]*

3. **Akshay L Chandra**, S.V. Desai, Wei Guo, S. Ninomiya, Vineeth N Balasubramanian. An Adaptive Supervision Framework for Active Learning in Object Detection. British Machine Vision Conference (**BMVC**) 2019.

4. **Akshay L Chandra**, S.V. Desai, Vineeth N Balasubramanian, S. Ninomiya, Wei Guo. EasyRFP: An Easy to Use Edge Computing Toolkit for Real-Time Field Phenotyping. CVPPP Workshop at ECCV 2020.

RESEARCH/WORK EXPERIENCE

- **Indian Institute Of Technology Hyderabad** — Hyderabad, India
  Research Assistant, Lab1055 (Machine Learning and Vision Lab) — *Dec 2018 - Present*
  - ○ Working under the guidance of **Dr. Vineeth N Balasubramanian**, mainly in the intersection of computer vision, deep active learning, object detection, semantic segmentation and plant phenotyping, frequently collaborating with **Dr. Wei Guo** from University of Tokyo. Please see Research Projects section for full details.

- **GGK Technologies (ACS Corp.)** — Hyderabad, India
  Associate Software Engineer, AI/ML (R&D) Team — *June 2017 - Sept 2018*
  - ○ Optimized business processes for clients in health care, retail, e-commerce by building useful prediction models, capturing customer/patient behavior patterns. Exclusively worked on building an accelerated computer vision application that detects product pickups in a retail store from the CCTV footage.
  - ○ Won **Best Trainee** and **Best Employee** awards during my time at the company.

RESEARCH PROJECTS

- **Reinforced Active Learning** — *July 2020 - Present*
  Advisor: Dr. Vineeth N Balasubramanian (IIT Hyderabad)
  - ○ Working towards making active learning learnable and transferable with deep Q-networks (DQN).
  - ○ This work is being done as part of a collaboration between IIT Hyderabad and NVIDIA India.

- **On Initial Pools for Deep Active Learning** — *Nov 2019 - Present*
  Advisor: Dr. Vineeth N Balasubramanian (IIT Hyderabad)
  - ○ Currently working towards exploiting self-supervised methods to intelligently select initial pools for active learning in a completely unsupervised fashion. The goal is to find *good init* in data space. Our proposal was accepted at Preregistration workshop at NeurIPS 2020.

[†]Not in any order.

- **Edge Computing Toolkit for Field Phenotyping** *June 2020 - Aug 2020*

  Advisors: Dr. Vineeth N Balasubramanian (IIT Hyderabad) & Dr. Wei Guo (UTokyo)
    - We built a Flask back-end, AngularJS front-end edge computing toolkit for real-time field phenotyping that can work on any GPU based edge devices such as NVIDIA Jetson Xavier.
    - Our lightweight but adaptable toolkit allows field phenotyping researchers to seamlessly deploy and monitor their models' performances on the go.
    - This work was accepted at CVPPP Workshop, ECCV 2020. Code: https://github.com/lab1055/easy-rfp.

- **Deep Active Learning for Object Detection** *Dec 2018 - Oct 2019*

  Advisors: Dr. Vineeth N Balasubramanian (IIT Hyderabad) & Dr. Wei Guo (UTokyo)
    - We worked on understanding what makes an image "informative" in the context of object detection. We were able to design a framework that allows the detection model to specifically ask for what it wants - either object localization information or object class information or both. This reduced 30% annotation time on PASCAL VOC 2007 dataset
    - Consequently, we were also able to create 3 active learning query metrics for detection with point supervision.
    - These two works were accepted at the BMVC'19 and BMC Plant Methods journal.

OTHER APPLIED PROJECTS†

- **Deep Active Learning Toolkit in PyTorch** *Sept. 2020 - Present*
    - This is an end-to-end PyTorch toolkit with implementations of the latest SOTA deep active learning methods such as Coresets, VAAL, BALD, Ensemble-varR, etc. Code: https://github.com/acl21/deep-active-learning-pytorch

- **Image & Bounding Box Annotation Slicer** *Apr 2019*
    - Slices images and their bounding box annotations into smaller tiles as needed. It can also resize them, both by specific sizes and by a resizing/scaling factor. Code: https://github.com/acl21/image_bbox_slicer

- **Mouse Cursor Control With Facial Movements** *Oct 2018*
    - Controls mouse cursor with facial movements, uses Deep Learning, works with a regular webcam. It is hands-free, no wearable hardware or sensors needed. Code: https://github.com/acl21/Mouse_Cursor_Control_Handsfree
    - Demonstration video of the project received over 300,000 views and 7500 likes on LinkedIn.

RELEVANT SKILLS & CERTIFICATIONS

- **Languages**: Python, R, Java, C, C++, C#, SQL, PHP, JavaScript.

- **Libraries & Packages**: PyTorch, PyTorch-Lightning, TensorFlow, Keras, OpenCV, Sklearn, Matplotlib.

- **Certifications**: Deep Learning (IIT Madras; AICTE-FDP approved), Computer Vision Nanodegree (Udacity), Deep Learning Specialization (Coursera), Java SE 6 Programmer (Oracle).

POSITIONS OF RESPONSIBILITY

- Teaching Assistant to Dr. Vineeth N Balasubramanian for the course: Deep Learning for Computer Vision in 2020.

- Teaching Assistant to Dr. Vineeth N Balasubramanian during the Summer School of AI, 2019 held at IIT Hyderabad.

- Student Mentor, Project Reviewer & Peer-to-Peer Auditor at Udacity since November 2018.

- Served as a subreviewer at NeurIPS'20, ECCV'20, SIAM'20, IEEE TNNLS A/E, CVPPP'20 (reviewer also).

- Volunteered to work as a machine learning instructor for 6 hands-on sessions at EduRidge India in 2018.

REFERENCES

1. **Dr. Vineeth N Balasubramanian**, Head of Department - Department of Artificial Intelligence / Associate Professor - Department of Computer Science and Engineering, Indian Institute of Technology, Hyderabad - India.

2. **Neil Gogte**, Founder, Director and Professor at Keshav Memorial Institute of Technologies / Secretary, Founder at Neil Gogte Inistitute of Technologies, India.

3. **Manas Pant**, Associate Vice President, Data Science at PasarPolis Indonesia. Former Senior Manager at GGK Technologies, India.

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†Full list of projects can be found on my GitHub account.