Jaya Krishna Mandivarapu, Ph.D. in Computer Science

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INTERESTS

Continual Learning or LifeLong Learning, Active Learning, Few Shot Learning, Deep Reinforcement Learning, Computer Vision, Natural Language Processing, Robotics.

RESEARCH OVERVIEW

My research goal is in the field of Deep learning (Continual Learning, Active Learning, Few-shot Meta-Learning) to solve realtime computer vision, Natural Language Processing (NLP) problems. My goal is to achieve general artificial intelligence in agents with features like continual learning, active learning, cross domain few-shot learning both in the Computer Vision and NLP domains. Such that can agent learn continually over an indefinite period of time without forgetting old knowledge, by getting smatter by utilizing the accumulated knowledge, learning from fewer data and achieving generalization across the domains. To achieve this continual/ life-long learning type of a scenario, I am trying to solve catastrophic forgetting in neural nets and demonstrate experiments on domain like computer vision, NLP (Natural Language Processing).

EDUCATION

Georgia State University — Since Jan 2018
Ph.D. in Deep Learning, Department of Computer Science
- Advisor: Dr.Rolando Estrada

Georgia State University — Aug 2016 - Dec 2017
Master's in Data Science and Analytics, Robinson College of Business
- CGPA: 3.9/4.0
- Advisor: Dr.Rajsekhar Sundaraman

Gudlavalleru University — Jul 2009 - Aug 2013
Bachelor of Technology (B.Tech.) in Electrical & Electronics Engg with Honours
- CGPA: 8.8/10.0

PROFESSIONAL EXPERIENCE

American Family Insurance AI Research, Madison, WI — May '21 - Aug '21
Research Intern, AMFAM-ML Research Team

American Family Insurance AI Research, Madison, WI — May '20 - Aug '20
Research Intern, AMFAM-ML Research Team

Center for Disease Control & Prevention(CDC), Atlanta, GA — Aug '16 - Jan '18
Student Researcher, CDC Disease Research Team

Cox Automotive, Atlanta, GA — May '17 - Aug '17
Analytics Intern, Cox Data Science Team

Cognizant Technological Solutions, NewJersey — Jan '13 - Aug '16
Programmer Analyst and Research Associate, Software R&D Center

AWARDS & GRANTS

- Brains & Behaviour Fellowship 2018
- Received Continual Learning grant from GoodAI for developing non-iid based continual learning framework
- Part of NSF-Grant for Continual Learning through diffusion-based systems

PUBLICATIONS

- Continual Learning with Deep Artificial Neurons
Blake Camp, **Jaya Krishna Mandivarapu**, Rolando Estrada
Submitted to International Conference on Learning Representations (ICLR-21)

- Deep Active Learning via Open Set Recognition
Jaya Krishna Mandivarapu, Blake Camp, Rolando Estrada
InReview at Frontiers in AI (FAI-21)

- Self-GCL: Continual Learning using Graph Neural Networks
Jaya Krishna Mandivarapu, Blake Camp, Rolando Estrada
Work In Progress

- A Scalable Approach to Multi-Context Continual Learning via Lifelong Skill Encoding
Jaya Krishna Mandivarapu, Blake Camp, Rolando Estrada
Published in Frontiers in Artificial Intelligence(FAI-2019)

- Self-net: Lifelong learning via continual self-modeling
Jaya Krishna Mandivarapu, Blake Camp, Rolando Estrada
Published in Frontiers in Artificial Intelligence(FAI-2019)

- Cross Domain Few Shot learning for Document Intelligence using Canonical Correlation
Jaya Krishna Mandivarapu, Blake Camp, Rolando Estrada
Submitted to Association for the Advancement of Artificial Intelligence (AAAI-21)

- Domain Agnostic Few-Shot Learning For Document Intelligence
Jaya Krishna Mandivarapu, Eric Bunch, Glenn Fung
Submitted to Association for the Advancement of Artificial Intelligence (AAAI-21)

- Efficient Document Image Classification Using Region-Based Graph Neural Networks.
Jaya Krishna Mandivarapu, Eric Bunch, Qian You, Glenn Fung
Published at Knowledge Discovery and Data Mining -Document Intelligence (KDDW-21)

- A new cross-platform architecture for epi-info software suite
Blake Camp, **Jaya Krishna Mandivarapu**, Jay Mehta, Nagashayana Ramamurthy, James Wingo, Anu G. Bourgeois, Xiaojun Cao, and Rajshekhar Sunderraman
Published at BMC Bioinformatics(BMC-18)

- A Cross-Platform System Architecture for Form Design and Data Analytics for Public Health
Blake Camp, **Jaya Krishna Mandivarapu**, Jay Mehta, Nagashayana Ramamurthy, James Wingo, Anu G. Bourgeois, Xiaojun Cao, and Rajshekhar Sunderraman
Published at ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics(ICB-17)

TECH TALKS

- **Efficient Document Image Classification Using Region-Based Graph Neural Networks. (Aug-2021)**
KDD-W on Document Intelligence

- **Continual Learning for Building General AI Agents (June-2021)**
American Family Insurance AI Research

- **Biologically Inspired Continual learning (May-2020)**
American Family Insurance AI Research

TEACHING   **Instructor**

- **Machine Learning (Csc:4850)**   Aug-2021 - Dec-2021
core undergraduate class on the fundamentals of machine learning.

- **Data Mining (Csc:6740)**   Aug-2020 - Dec-2020
  core graduate & undergraduate class on the fundamentals of data mining and machine learning.
- **Data Mining (Csc:6740)**   Jan-2020 - May-2020
  core graduate & undergraduate class on the fundamentals of data mining and machine learning.
- **Principles of Computer Science I Mining (Csc:1301)**   Jan-2019 - May-2019
  core undergraduate class on the fundamentals of java programming.

Teaching Assistant
- Advanced Computer Vision (CSC 8950)
- Data Structures (CSC 2720)
- Design and Analysis of Algorithms (CSC 6520)
- Data Visualization (CSC 4730)
- System Level Programming (CSC 4210)
- Computer Architecture (CSC 3320)
- Web Programming (CSC 4370)

SERVICE

Conference and Journal Reviewing:
- Neural Information Processing Systems (NeurIPS)-W Meta-learning : 2021.
- International Conference on Learning Representations (ICLR): 2021
- International Conference on Artificial Intelligence and Statistics:2020

Other Activities
- **Vice President, IEEE Georgia State University**   Since Jan 2018
- **International Student Leader (Global Student Mentors)**   Aug 2019
- **Co-founder of startup's Courselabz**   May 2020

COMPUTING EXPERTISE

Expertise:
- **Data Packages & Languages:** Python, R, JAVA, Apache Spark and Solar.
- **Deep Learning Frameworks:** Pytorch,Tensorflow
- **Gaming Engines:** Unreal Engine
- **Machine Learning Algorithms:** Linear Regression, Logistic Regression, SVM, Naive Bayes, Random Forest, NLP (Spacy and genism), Predictive Analytics, Recommendation Engine
- **Deep Learning:** Computer Vision (Convolution Neural Networks (CNN), Reinforcement Learning), NLP(BERT)
- **Cloud Technologies:** AWS, Microsoft Azure, Microsoft Azure Machine Learning, Microsoft Azure Analytics.
- **Databases and Visualization:** SQL, MySQL, Neo4j, MongoDB, MS Access, Tableau.
- **Other & Web Development:** WinSCP, Putty, React JS, Node.js.