ANKAN BANSAL

Applied Science Manager, Amazon AWS, Pasadena CA

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Machine learning and AI leader with over 10 years of experience creating state-of-the-art models and data pipelines. Currently managing multi-faceted teams in computer vision and language research (LVLMs and LLMs) and delivering generative AI products, driving advancements in AI while solving real-world problems.

PROFESSIONAL EXPERIENCE

Amazon AWS, Pasadena, USA

Applied Science Manager and Senior Applied Scientist   *December 2022 - Present*

- Managing and technically leading a team of 14 scientists within Amazon Q Business in developing large vision-language model (VLM)-based agents for enterprise users. Creating and contributing to product, science, and engineering road-maps for fast deliveries and long-term improvements. Announced in Matt Garman's (CEO, AWS) keynote at AWS re:Invent 2024.
- Spear-heading the development of evaluation approaches for automation agents. Organizing and leading deep dives into the challenges and limitations of existing approaches and devising novel approaches of evaluating the quality of agents which match human perception.
- Managed a team of 8 scientists and research engineers which built intelligent document processing (IDP) systems, called BDA, within Amazon Bedrock using generative AI (VLMs and LLMs) as part of a larger org of 30 scientists and engineers. Owned the Science development for the service and collaborated with Product and Engineering owners to deploy it. Launched at AWS re:invent 2024.
- Led the comprehensive responsible AI (RAI) assessment, and mitigation for GenAI document processing systems (BDA and Amazon Textract). BDA obtained a "low" risk rating ($\leq 1\%$ error rate) across all dimensions (race, gender, age, PII hallucination). This was instrumental in achieving the ISO/IEC 42001 accredited certification for Amazon Bedrock.
- Drove the entire data collection process for BDA by building consensus among data TPMs, SDEs and SDMs, product managers, science teams, and 150 annotators. Delivered about 15,000 documents with annotations obtained using ML-Assisted tooling developed by a multi-disciplinary team of scientists and engineers under my guidance. This tool led to over 50% higher annotation efficiency.
- Hiring, managing, mentoring, and developing scientists and engineers in the org and across the company. Serving as a "Bar Raiser" to improve hiring outcomes across the company by helping design useful loops, collecting relevant data, and driving high-quality, data-driven decisions in de-briefs.

Applied Scientist   *August 2020 - December 2022*

- Created several transformer-based models for extracting structured information from invoices and receipts. Conducted pre-training, supervised fine-tuning, and evaluation of these models. These models are in production (Amazon Textract) and generating more than $1M ARR.
- Led the science component of data generation, sourcing, and annotation for the product.

EDUCATION

Doctorate (PhD), Electrical and Computer Engineering   *July 2020*
University of Maryland, College Park, MD, USA
Advisor: Rama Chellappa
Topic: Detecting and Recognizing Humans, Objects, and their Interactions

Master of Science (MS), Electrical and Computer Engineering   *July 2019*
University of Maryland, College Park, MD, USA

Master of Technology (M.Tech.), Electrical Engineering   *June 2015*
Indian Institute of Technology, Kanpur, India
Topic: Estimating Number of People in Very High Density Crowds

Bachelor of Technology (B.Tech.), Electrical Engineering   *June 2015*
Indian Institute of Technology, Kanpur, India

SELECTED PUBLICATIONS AND PATENTS

DocTr: Document Transformer for Structured Information Extraction in Documents
Haofu Liao, Aruni RoyChowdhury, Weijian Li, *Ankan Bansal*, Yuting Zhang, Zhuowen Tu, Ravi Kumar Satzoda, R. Manmatha, Vijay Mahadevan
International Conference on Computer Vision (ICCV), 2023

Zero-shot Object Detection
Karan Sikka, Ajay Divakaran, *Ankan Bansal*
US Patent 11,610,384, 2023, link

Object-Aware Cropping for Self-Supervised Learning
Shlok Kumar Mishra, Anshul Shah, *Ankan Bansal*, Janit K Anjaria, Abhyuday Narayan Jagannatha, Abhishek Sharma, David Jacobs, Dilip Krishnan
Conference on Lifelong Learning Agents (CoLLAs), 2023, *Journal Track*, link

Pose and Joint-Aware Action Recognition
Anshul Shah, Shlok Mishra, *Ankan Bansal*, Jun-Cheng Chen, Rama Chellappa, Abhinav Shrivastava
WACV 2022, link

Deep CNN Face Recognition: Looking at the Past and the Future
Ankan Bansal, Rajeev Ranjan, Carlos D Castillo, Rama Chellappa
Deep Learning-Based Face Analytics, 2021, link

Visual Question Answering on Image Sets
Ankan Bansal, Yuting Zhang, Rama Chellappa
European Conference on Computer Vision (ECCV), 2020, link

How are attributes expressed in face DCNNs?
Prithviraj Dhar, *Ankan Bansal*, Carlos D. Castillo, Joshua Gleason, P. Jonathon Phillips, Rama Chellappa
IEEE International Conference on Automatic Face & Gesture Recognition (FG), 2020, link

Detecting Human-Object Interactions via Functional Generalization
Ankan Bansal, Sai Saketh Rambhatla, Abhinav Shrivastava, Rama Chellappa
Thirty-Fourth AAAI Conference on Artificial Intelligence, 2020, link

Zero-Shot Object Detection
Ankan Bansal, Karan Sikka, Gaurav Sharma, Rama Chellappa, Ajay Divakaran
European Conference on Computer Vision (ECCV), 2018, link

The Do's and Don'ts for CNN-based Face Verification
Ankan Bansal, Carlos Castillo, Rajeev Ranjan, Rama Chellappa
International Conference on Computer Vision (ICCV) Workshops, 2017, link

UMDFaces: An Annotated Face Dataset for Training Deep Networks
Ankan Bansal, Anirudh Nanduri, Carlos Castillo, Rajeev Ranjan, Rama Chellappa
International Joint Conference on Biometrics (IJCB), 2017, link

HONORS AND AWARDS

- Jacob K. Goldhaber Travel Grant, University of Maryland, 2017
- Clark School of Engineering Distinguished Graduate Fellowship, University of Maryland, 2015-2016
- MCM Scholarship, IIT Kanpur, 2010-2014
- National Talent Search Examination (NTSE) scholarship by Government of India, 2008-2010
- Science Student Award by State Government of Uttar Pradesh, 2008

SKILLS

Programming Languages and Tools: Python, PyTorch, Tensorflow
Human Languages: Hindi (native), English, Spanish (beginner)
Leadership and Management: Cross-functional teams, Communication, Strategy and Execution

SERVICE

Co-instructor for Machine Learning and Data Mining Course at Caltech (2022)
Reviewer for CV and ML conferences (CVPR, ICLR, NeurIPS etc.), and journals (IJCV, TIP, etc.)
Student Guide and Link Student, Counselling Service, IIT Kanpur, 2011-2012

OTHER INTERESTS

I am a reader, a quizzer, a violinist, an archer, and a chess player.