Bipasha Sen

Research Interests

Human Activity Forecasting, Scene Understanding, Audio-Visual Learning

Personal info

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Education

K.C.College of Engineering, University of Mumbai   2012 - 2016
B.E. in Computer Engineering (First Class with Distinction)
- Thesis: Reinforced and Collaborative Music Recommendation
- Relevant classes taken:
  CPC 703 Artifical Intelligence
  CPE 7023 Image Processing

Research Experience

Microsoft Research & Development   2016 - Present
Data Scientist II (Microsoft's Search and Assisted Intelligence) - Outlook Platform
- **Self-Supervised Meeting Summarization (BReSQ):** A self-supervised framework to generate summary of long meetings with multiple participants and speakers. **B**revity to reduce the transcript to a short latent space, **Re** to evaluate if the summary contains all the important points covered in the meeting, **S**pan to keep the summary from getting too short, **Q**uality to enable readability.
  Role: Technical Lead, leading a team of two.
  Domain: Self-supervision, Natural Language Processing, Deep Learning
  Techniques: Unsupervised Models: Generative Adversarial Networks, Autoencoders.
- **Suggested Attachments**: Suggestion of relevant documents to an email with high precision.
  Role: Leading Inline Suggested Attachments (team of two) scenario that suggests relevant documents to a half-composed email by determining the intended file-type, user-file-affinity with limited context.
  Domain: User Behavioral Patterns Analysis, Natural Language Processing, User experience
  Techniques: Graph Neural Network, Learning to Rank from Click Logs, Distributed Computing.
  Impact: More than 100 million users per month.
- **Meeting Insights**: Recommendation of relevant email to past and future meetings with high recall.
  Role: Leading the project to build L1 ranker that retrieves set of potential candidates for recommendation using a knowledge graph called AiGraph generated using Outlook data.
  Domain: Information Retrieval, Natural Language Processing, User experience
  Techniques: Graph Neural Network, Distributed Computing to train on over 50 million datapoints.
  Impact: More than 50 million users per month.
- **Detection of Business Trips:** Clubbing Flights, Hotels, Bus and Cab reservation emails to form a single logical entity representing an end to end trip, **Role:** Technical Contributor
  Domain: Algorithms, Optimization, User experience
- **Key Information Extraction:** Scalable approach for extracting key information from a long email such as Invoice amount, Account number, Due Date, without taking dependency on sender templates.
  Role: Technical Contributor
  Domain: Natural Language Processing, Anomaly Detection, Algorithms, User experience
  Techniques: Microsoft's Program Synthesis using Examples (PROSE)

Microsoft Research & Development   December 2015
Data Scientist - Intern (Search Technology Center India)
- **Conversational Shopping Assistant Bot:** A bot tasked for proactively engaging the users and assisting them towards placing an order. **Role:** Responsible for creating a bot from scratch self-trained using reinforcement learning (defined the optimal policy & reward).
  Domain: Reinforcement Learning, Natural Language Processing

Publications

Reed: An Approach Towards Quickly Bootstrapping Multilingual Acoustic Models, paper
Bipasha Sen, Aditya Agarwal, Mirishkar Sai Ganesh, Anil Kumar Vuppala
Spoken Language Technology (SLT 2021)

An Approach Towards Action Recognition using Part Based Hierarchical Fusion, paper
Bipasha Sen, Aditya Agarwal
International Symposium on Visual Computing (ISVC 2020)

Microsoft Publications

Sentence Modelling for Contextual Meeting Segmentation, short-paper
Jay Paranjape, **Bipasha Sen**
Microsoft's Machine Learning and Data Sciences (MLADS 2020)

AiGraph for Meeting Insights Relevance, short-paper
Bipasha Sen, Prakash Pandey, Rajeev Gupta, Vipin Vangala
Microsoft's Machine Learning and Data Sciences (MLADS 2020)

Major projects

Reinforced and Collaborative Music Recommendation   2016
Undergraduate Thesis
Developed an agent that recommends music from the song-library on the phone. The agent continuously learns and evolves based on collaborative (users wiht similar behavioral pattern) feedback.

Anterior Segment Imaging (MIT Media Lab's REDX Camp)   2015
REDX is an interdisciplinary platform to enable collaboration between world-renowned medical professionals and engineers to build solutions for society's most pressing eye related healthcare challenges. Developed a low-cost, solid-state device with no moving parts, as a replacement for heavy and bulky Ophthalmic Slit Lamp, to capture and reconstruct 3D model of the cornea (anterior segment of the eye) for differentiating between a healthy and unhealthy cornea.

TheBhaad: Cloud-Based Group-Oriented file sharing network (video)   2014
Single-handedly developed a fully-fledged cloud-based file sharing network with windows like user-interface. Features: Search, Contacts, Groups (Classrooms), Personalized Document Alignment.

Awards and Honors

Invited for talk at MLADS on Quick Bootstrapping of Multilingual Models	July 2020
3rd in Microsoft One Week Hackathon - Mobile Endpoint (3k+ participants)	August 2016
126th in TCS TCS CodeVita '15 Round 2 (19800+ participants)	February 2016
Best Student of the Year (Overall outstanding undergraduate accomplishments)	February 2016
Best Entrepreneur (For founding TheBhaad and hosting 5000+ users)	March 2015

Skills

Languages	Python, Spark.net, C#, C/C++, HTML, CSS, jQuery
Framework	Pytorch, Tensorflow, scikit-learn

Extra-Curricular

I am a musician: vocalist, guitarist and composer. I've toured around India along with my previous band, Andrometa. I've also travelled to 6 countries - 11 states solo to meet 70+ bands (180+ artists).