Anil Goyal

Director of Scientific Research

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DOB: 17/12/1991

Work Experience

Jul'21– present **Director of Scientific Research**, *BUDDIHealth*, Chennai, India.

- **Leading and defining the research roadmap** for 3 programs (Document Extraction, Knowledge Systems and Medical Imaging) ensuring alignment to business objectives and strategies.
- Actively involved in **designing and developing novel ML/DL algorithms**, patenting and publishing them to conferences and journals.
- Work closely with **cross functional teams** of Product Managers, Designers and Engineers for productizing ML research.
- Responsible for **understanding client needs** and productizing the solutions for them.
- **Represented BUDDI.AI** at Nunnarangu 2021 (AI/ML Startup Showcase) event organized by Tamil Nadu e-Goverenance Agency (TNeGA).

Aug'20– Jun'21 **Principal Research Scientist**, *BUDDIHealth*, Chennai, India.

- **Bucket Classification (R&D):** Designed and developed an algorithm for classifying medical documents into different buckets based on predictions from medical autocoding system.
- **Contract Analysis Application:** Designed and developed a system for analyzing medical contract documents and extracting reimbursement access criteria. Finally, deployed the system in production as FastAPI.
- Organized a **social event at ICLR 2021** on "Unstructured Data Challenges in Healthcare".
- **Won the 1st Prize** (out of 22 teams) at 2 days internal hackathon event. We addressed the challenge of medical autocoding using contextual graphs and elasticsearch.
- Actively involved in **mentoring and recruiting** junior research associates.

Oct'18–Aug'20 **Research Scientist**, *NEC Laboratories Europe*, Heidelberg, Germany.

- **Research & Development:**
  - Designed and developed an ensemble learning based algorithm for imbalanced binary classifications tasks (applied to predictive maintenance, credit fraud detection, webpage classification and medical tasks). Filed a patent and accepted international paper.
  - Designed and developed a continual learning based ML algorithm.
  - International Publication: IJCNN 2020 (CORE RANK A).
- **Project Management:**
  - **European Union Project COREALIS :** Lead the development and productization of models for predictive maintenance and travel time prediction tasks for trucks operating at European sea ports using meta learning for ensemble methods.
  - **Business Unit Projects:** Lead the development of algorithms for projects on driver drowsiness detection (using multi-task learning) and predictive maintenance task (using ensemble learning).
- Responsible for developing interactive **visualizations** for developed methods.
- Utilized **Design Thinking** principles to solve wicked problems in public safety domain.

Nov'15–Oct'18 **Doctoral Researcher**, *LIG, Grenoble and LaHC, Saint-Etienne*, France.

- Designed and developed 3 multiview learning algorithms using PAC-Bayesian theory and ensemble learning.
- Experimented on text (written in 5 languages) and image (with 4 views) datasets. Showed significant improvement in prediction performance compared to state-of-art methods.
- Actively involved in French ANR Project LIVES.
- International publications: Neurocomputing Journal 2019, IDA 2018 (CORE Rank A), ECML-PKDD 2017 (CORE Rank A).
- National publications: CAp 2018, CAp 2017, CAp 2016.

Aug–Oct'15 **Data Science Engineer**, *Cube26 Private Limited*, New Delhi, India.

Developed algorithms for aggregation of similar news articles from different sources and finding the appropriate advertisement banners for the news articles for Neon News android application.

Feb–Jun'15 **Research Intern**, *Laboratoire d'Informatique de Grenoble (LIG)* , Grenoble, France.
- Designed and developed an algorithm for learning information retreival models' parameters using transfer learning approach from a labeled source collection to an unlabeled target collection (under the guidance of Prof. Massih-Reza Amini.).
- Publication at French Machine Learning Conference CAp 2015.

May–Aug'14 **Software Developer**, *Pyramid Cyber Security & Forensics Private Limited*, New Delhi, India.
Designed and developed an algorithm to detect frauds (made using erasable ink pens) in bank cheques for Punjab National Bank, India.

May–Jul'13 **Research Intern**, *University of Hyderabad*, Hyderabad, India.
- Designed and developed an algorithm to find number of clusters in short text documents using Ncut-term weighing scheme and spectral clustering (under the guidance of Prof. Arun K. Pujari).
- Publication at IEEE conference NCVPRIPG 2013.

Education

2015–2018 **Ph.D. in Machine Learning**, *Université de Lyon*, Lyon, France,
Supervisors: Prof. Massih-Reza Amini and Dr. Emilie Morvant.
Subject: Learning a Multiview Weighted Majority Vote Classifier: Using PAC-Bayesian Theory and Boosting.

2014–2015 **Masters of Science in Informatics (MOSIG)**, *ENSIMAG, Grenoble INP*, Grenoble,France, *(with honors)*.

2010–2014 **Bachelor of Technology**, *The LNMIIT*, Jaipur, India, *CGPA – 8.69/10*.
Specialization: Computer Science and Engineering

Activities

Student Supervision **Soroush Seifi**, Subject:"A PAC-Bayesian Multiview Study", Laboratoire Hubert Curien, CNRS, Saint-Etienne, France (Apr–Jun,2016).
Co-supervised with Prof. Amaury Habrard and Dr. Emilie Morvant

Conferences ICLR'21, IJCNN'20, ICML'20, IDA'18, ECIR'18, CAp'18, CAp'17, CAp'16, NCVPRIPG'13

Workshops XAI Bootcamp'21, Design Thinking'19, Proposal Writing for H2020 R&I Projects'19, Deep Learning Workshop'17,Computational and Statistical Trade-offs in Learning'16

Summer School Gaussian Process and Uncertainty Quantification Summer School, 2019

Teaching Assistance **Database Management Course**, The LNMIIT, Jaipur, India (Jan-May, 2012 & 2013).
Co-advised with Prof. Subrat K. Dash

Skills

Programming Python, C, JAVA, MATLAB, SQL

Tools ML tools (Scikit-learn, Numpy, Pandas, Jupyter notebook), Deep Learning (TensorFlow), Visualization (Plotly, Matplotlib, D3.js, Mapbox), Web Development (HTML, CSS, PHP, JavaScript, JSP), AWS (EC2), Terrier IR Platform

Project Management Agile Methodology, Design Thinking, Experience in working in multidisciplinary teams

Patent Applications

2020 Tobias Jacobs and **Anil Goyal**, "Decentralized Multi-task Learning".

2020 **Anil Goyal**, Ammar Shaker and Francesco Alesiani, "A method for Machine Learning Knowledge Management based on life-long boosting in presence of less data".

2019 **Anil Goyal** and Jihed Khiari, "Diversity-Aware Weighted Majority Vote Classifier for Imbalanced Datasets"

Publications

Google Scholar Profile