Soumya Ranjan Sahoo

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Saarland University , Germany

EDUCATION

Saarland University — Saarbrücken, Germany
Master of Science in Embedded Systems, Department of Computer Science — *Oct 2018 - Present*

Thesis : (Ongoing) Currently writing my thesis with the *Department of Databases and Information Systems, Max-Planck Institute for Informatics*, and under the supervision of Dr. Erisa Terolli and Dr. Patrick Ernst on adhoc neural information retrieval systems for the health domain. [Details available on request]

IIIT Bhubaneswar — Bhubaneswar, India
Bachelor of Technology in Electronics and Telecommunication Engineering; GPA: 8.38/10.0 — *Aug 2012 - May 2016*

Thesis: Performance improvement of MIMO based Free Space Optical links: Diversity and Variable Aperture techniques - under Dr. Bijayananda Patnaik, IIIT Bhubaneswar

SKILLS

- **Languages**: Python, Java, R, C++, MATLAB, SQL/No-SQL
- **Technologies**: GitHub, Elastic Stack, Docker, GCP, AWS, LabView

EXPERIENCE

Laboratory for Computational Social Systems, IIIT Delhi — Delhi, India
Visiting Student Researcher — *Dec 2020 - Present*

- Studying social networks for exploring structural and behavioural properties using graph mining and NLP.

Fraunhofer IZFP — Saarbrücken, Germany
Graduate Research Assistant, Department of Algorithm, Signal, and Data Processing — *June 2020 - Nov 2020*

- Implemented LSTM Autoencoder for automatic audio defect detection for rotating machineries.
- Research and development of various unsupervised segmentation algorithms for 3D thermographic images.

German Research Center for Artificial Intelligence (DFKI) — Saarbrücken, Germany
Student Assistant, Multilinguality and language technology group — *June 2019 - Sep 2019*

- Worked on Quality Estimation for Neural Machine Translation

Utopia Labs — Bangalore, India
R&D Engineer (Data Science) — *Apr 2018 - Aug 2018*

- **Developed Match & Merge**: A toolkit for automating EAM processes
  - Match and Merge is an intelligent file search and merging tool which auto-classifies files and merges them to a single master record based on the specifications provided by the end-user. Also, a detailed exploratory analysis is supported by the tool. It leverages NLP and ML at its core. The toolkit is developed using Klein web services. Also, facilitated an Elastic Search based RESTful search and analytics engine for near real-time search.
  - Guided Interns on developing a master data extraction tool, which recognises the correct entities from a description based on certain attributes and auto classifies them.

Loonycorn — Bangalore, India
Content Engineer (Machine Learning) — *Feb 2018 - Apr 2018*

- **Developed an online coursework on building TensorFlow models and deploying on AWS, GCP and Azure**: Exporting trained TensorFlow models that are ready to use in ML problems; containerization using Docker, orchestration using Kubernetes and deployment on all three major cloud platforms - AWS, Azure and GCP

Infosys Limited (Currently Infosys NIA) — Bangalore, India
Systems Engineer - Data Science — *June 2016 - Nov 2017*

- **Strong hands on experience working as an Associate Data Scientist using R programming and Python for various use cases in DataOps analytics, CIS-R&D**:
  - Worked on association and temporal data mining problems to mine and associate frequent error patterns in log data leading to infrastructure based incidents.
  - Worked on NLP based text analytics for development of NIA, AI Platform of Infosys. Played a major role in developing Exploratory Data Analytics and Predictive Analytics web-applications using RShiny.
  - Worked on a R&D project by Infosys Labs and Infosys Security Group(ISG) : Mining and classification of malicious, spam and phishing texts using machine learning and deep learning approaches.
  - Worked as a Java Developer working with Struts Framework, JSP, Servlets and JS for development and maintenance of a Legal search engine : Lexis Search Library, Reed Elsevier product.

IIT Bhubaneswar Bhubaneswar, India
Research Intern (Optical Signal Processing) *Dec 2015 - Jan 2016*

- **Optical DWDM system**: Worked as a Research Intern on various optical DWDM system performance analysis under Dr. P.K.Sahu

IIT Madras Chennai, India
Trainee/Summer School (Digital Signal Processing) *Dec 2014*

- **DSP programming and applications**: Implemented Edge Detection algorithms using BF609 ADSP processor

DRDO Chandipur, India
Student Intern (Communication Labs) *May 2014 - June 2014*

- **Centralized timing dissemination system**: Developed a centralized timing dissemination system and time code reader using LabVIEW and Raspberry Pi.

PROJECTS

- **Data Augmentation using Feature Generation for Volumetric Medical Image (at Max-Planck Institute for Informatics, Saarland University Campus)**: To generate synthetic brain tumor features conditioned on class labels;used Transfer Learning on U-Net FCNN and AC-GANs to generate tumor class conditioned image features.
- **Offensive language detection on Twitter (at LSV, Saarland University Campus)**: Explore NLP techniques and engineer a system that can cope with the creative use of language in Twitter, or the so-called Twitterese;used Naive Bayes and Facebook's Fasttext library for representation learning and tweet classification.
- **Music information retrieval: genre classification (at LSV, Saarland University Campus)**: Explore and extract optimal audio features to train a robust music genre classifier using machine learning and deep learning; SVM, Gaussian Mixture Models, LSTM Autoencoders, CNN, and RCNN.
- **Developed a clustering based machine learning web-application using flask framework (Software Engineering Chair, Saarland University Campus)**: The tool supports five different clustering algorithms in combination with dimensionality reduction. It has been used to cluster microstructures in Steel based on their physical properties by the Chair for Functional Materials, Saarland University.
- **Score me if you can (at CISPA, Saarland University Campus)**: Study on Robustness of Automated Essay Scoring Systems to Out-of-domain and adversarial Inputs ; used LSTMs and Genetic Algorithms to generate adversarially perturbed essays and artificially generated essays.
- **Accessible Price tag (at DFKI, Saarland University Campus)**: To make price tags and product information easily accessible for visually impaired users:Price tags are augmented with sensors (e.g. capacitive touch) such that users can touch the price tags to get auditive feedback about its price and the product itself via the user's personal smart phone.(Real-time IoT Project)
- **Free Space Optics (at IIIT, Bhubaneswar)**:
  - Designing of ANN based adaptive equalizer for FSO link.
  - Fuzzy Logic based photonic antenna for high speed FSO model
- **Hobby Electronics and IoT Projects**: Using RaspberryPi, Arduino and Netduino micro-controllers.

ADDITIONAL EXPERIENCE & ACHIEVEMENTS

- Won **Texas Instruments Analog Maker Challenge, 2015**, while representing IIIT Bhubaneswar in the East Zone, India
- Third in *Drill Droid, a Manual Robotics challenge* (out of 100+ teams) at the **National Space Science challenge, in association with ISRO**, IIT Kharagpur, 2013
- Won *Best Technical Exhibition* award (out of 50+ teams) at **IIIT Bhubaneswar 2017**
- Won many *Robotics, Circuit designing* competitions at **IIIT Bhubaneswar** during my bachelors studies
- Elected as a *Student-Chair* for **IEEE IIIT-Bh Student Chapter** based on high-achieving and technically strong undergraduate student for the session 2015-16
- Elected as a *Secretary* for **Automation and Robotics club, IIIT-Bh Student Chapter**, 2014-15
- Qualified for **Indian National Mathematics Olympiad**, 2010-11

SPECIAL INTERESTS

- Sports : Football, Swimming and Cricket
- Hiking, Photography and Cooking
- Instrumental Music : Playing Piano

REFERENCES

[References available upon request]