Russel Shawn Dsouza

CONTACT INFORMATION	National Institute of Technology Karnataka (NITK) rshwndsz@gmail.com NH66, Srinivasnagar, Surathkal, Mangalore rshwndsz.github.io Karnataka, India 575025. ⊙ in rshwndsz

RESEARCH INTERESTS

Computer vision, Neuroscience, Augmented Reality, Low power computing

EDUCATION

National Institute of Technology Karnataka (NIT Karnataka)
Bachelor of Technology, Electronics and Communications Engineering   *Jul 2017 – May 2021*

PUBLICATIONS

Lal, S., **Dsouza, R.**, Maneesh, M., Kanfade, A., Kumar, A., Perayil, G., Alabhya, K., Chanchal, A.K. and Kini, J.
"A Robust Method for Nuclei Segmentation of H&E Stained Histopathology Images."
2020, 7th International Conference on Signal Processing and Integrated Networks (SPIN) (pp. 453–458). IEEE.
DOI: 10.1109/SPIN48934.2020.9070874

RESEARCH EXPERIENCE

Winter Research Intern, Deep learning lab, NIT Karnataka
Segmentation of nuclei in histopathology images of kidney, liver, bladder tissues
Mentored by Dr. Shyam Lal   *Dec 2019 – Feb 2020*

– Worked on the segmentation and grading of kidney and liver cancer from histology images.
– Worked on the detection of Urothelial Carcinoma from whole slide images with average dimensions of 80000×50000
– Built an open-source repository benchmarking segmentation models on histopathology datasets
– Presented a report on various semantic and instance segmentation methods.

Summer Research Intern, Deep learning lab, NIT Karnataka
Segmentation of nuclei in histopathology images of kidney tissues
Mentored by Dr. Shyam Lal   *May 2019 – Jul 2019*

– Worked on the efficient implementation of image processing algorithms on large datasets
– Worked on reproducing the results of seminal papers in the field of automated histopathology.

WORK EXPERIENCE

Frontend Developer
IRIS, NITK   *Aug 2018 – Apr 2019*

– Worked on building the frontend for the official student management portal for NITK — 'IRIS', which has more than five thousand daily active users including students, faculty, administrators, and alumni.
– Mentored a freshman intern on frontend testing in JavaScript.

Python Developer
Pinnacle Media, Manipal   *May 2018 – Jun 2018*

– Built and deployed real-time face detection and recognition, using OpenCV, dlib, and scikit-learn, on a Raspberry Pi as a part of an 'employee attendance' system.

SKILLS

Languages: C++, Python, MATLAB, Javascript, C, Rust, Verilog, ngSPICE
Frameworks and packages: Pytorch, Keras, OpenCV, Scikit-learn, Numerical Python
Web Development: ReactJS, ExpressJS, NodeJS, MongoDB, GraphQL
Hardware: Raspberry Pi, Arduino, Xilinx Artix 7 FPGA
Natural languages: English, Hindi, Kannada

NOTABLE PROJECTS	**_Satellite detection in images from low-cost telescopes_** _Jul 2020 – Present_

– Working on the design and development of a model to detect orbiting objects in the geostationary ring, from sequences of consecutive frames imaging unknown portions of the sky, as a part of the 'spotGEO' competition by the European Space Agency (ESA).

Identifying Melanoma in images of skin lesions   _Jun 2020 – Present_

– Working on building an ensemble network of multiple detection models to accurately detect skin cancer, specifically Melanoma, in images of skin lesions as a part of the SIIM-ISC Melanoma classification challenge on Kaggle.

Image Denoising   _July 2020_

– Reproduced a very deep persistent memory network to perform image restoration by removing noise and predicting uncorrupted images.
– The model was trained on images from the Berkeley Segmentation Dataset (BSDS300) and tested on a modified version of the CIFAR10 dataset.

Brain Tumour Segmentation (BraTS)   _Dec 2019_

– Reproduced state-of-the-art multi-class semantic segmentation models in Keras/TFv1 and trained them on a part of the BraTS dataset to segment brain tumours and surrounding edema from MRI images.

Detecting Ponzi schemes in smart contracts   _Aug 2019 – Sep 2019_

– Built a custom model to detect Ponzi smart contracts deployed on the Ethereum blockchain using CNNs and stacked auto-encoders.
– The model was trained on the raw bytecode of Ethereum smart contracts mined from the Ethereum blockchain using Google BigQuery, publicly available Solidity source code of popular smart contracts, and a publicly available dataset of known Ponzi schemes.
– The model was built in under 48h as a part of a deep-learning coding sprint.

Predicting truth level of news articles   _Jul 2019 – Aug 2019_

– Built a model to classify news articles into 6 different categories based on their truth level.
– The model was trained on the LIAR-PLUS dataset containing news articles and fact-checking justifications from trusted sources.

Space Time Adaptive Processing Radar   _Apr 2019_

– This project involved presenting a report on the current state of STAP in Radar Signal Processing.
– The report contained a MATLAB simulation of a radar implementing STAP.

RELEVANT COURSEWORK	Digital Signal Processing, Machine Learning for Neuroimaging Digital System Design, Statistical Analysis, Numerical Analysis Embedded System Design, Microprocessors, VLSI Design, Control Systems Data Structures & Algorithms, Digital Electronics & Computer Architecture