Russel Shawn Dsouza

Contact Information

National Institute of Technology Karnataka (NITK)
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Research Interests

Computer vision, Augmented reality, Medical imaging, Neuroscience

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 segmentation and grading of Kidney and Liver cancer from histology images.
- Worked on 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 fronted 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 checkin-checkout' system.

Skills

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

Notable Projects

Melanoma Classification *Jun 2020 – Jul 2020*

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Nuclear segmentation of histopathology images *Jan 2020 – Mar 2020*

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Brain Tumour Segmentation (BraTS) *Dec 2019*

– Built state-of-the-art multi-class semantic segmentation models and trained them on a part of the BraTS dataset to segment brain tumour and the surrounding edema from MRI images.
– Achieved an IoU score of 0.81 on the obtained dataset.

Detecting Ponzi schemes in Ethereum smart contracts *Aug 2019 – Sep 2019*

– Built a custom model 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 'blockchain and deep learning' themed sprint.

Predicting truth level of news articles *Jul 2019 – Aug 2019*

– Built a text classifier using a Bidirectional-LSTM. The model was trained on the Liar-Plus dataset to classify news articles into 6 different categories based on their truth level.

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