

# Kevin Raj

Research Assistant

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## Education

- 2021–2023 **Masters in Visual Computing**, *Universität des Saarlandes*, Saarbrücken.
- 2015–2019 **Bachelor on Electrical & Electronics Engineering**, *Manipal Institute of Technology*, Manipal.  
*Minor specialization: Signals & Systems.*

## Bachelors Thesis

- Title Optic Disc Segmentation Using Modified Deep Retinal Image Understanding (DRIU).
- Supervisors Dr. Chandra Sekhar Seelamantula & Assistant Professor Harish Kumar J.R.
- Description Proposed a technique for Optic Disc segmentation using retinal fundus images by combining squeeze & excite layer with Resnet-50 architecture, which acts as an initial point for Glaucoma assessment.

## Interests

Image Processing, Signal Processing, Computer Vision, Machine Learning, Linear Algebra.

## Experience

- Aug'19– Present **Research Assistant**, SPECTRUM LAB, IISc.  
Developing a complete pipeline for the analysis of Wireless Capsule Endoscopy (WCE) images, in collaboration with QPIAI™. and Indian Airforce command hospital, Bangalore. *Tool used: Pytorch.*
- Jan'19– **Research Intern**, SPECTRUM LAB, IISc.
- June'19 Proposed an Artery-Vein classification network from single-wavelength fundus images using the low-level to high-level features extracted from Identity mapping network, which acts as a backbone architecture. I also developed an ImageJ plugin and android application based on the 'ICIP 2019' paper. *Tool used: keras, ImageJ, Java.*
- May'18– **Summer Research Intern**, SPECTRUM LAB, IISc.
- July'18 Proposed a novel methodology using a multi-scale Harris corner technique and iterative Voronoi decomposition technique for optic cup segmentation using the structural properties of blood vessels. The Ministry of Human Resource Development (MHRD), India, under the IMPRINT initiative, funded this project. *Tool used: MATLAB.*

## Publications

- 2020 **P. Kevin Raj**, Aniketh Manjunath, J.R.H. Kumar and Chandra S. Seelamantula. "Automatic Classification of Artery-Vein from Single Wavelength Fundus Images", *In Proc. IEEE International Symposium on Biomedical Imaging (ISBI)*, Iowa, USA, 2020. [\[pdf\]](#)
- 2019 **P. Kevin Raj**, J.R.H Kumar, S. Jois, S. Harsha and Chandra S. Seelamantula. "A Structure Tensor based Voronoi Decomposition Technique for Optic Cup Segmentation", *In Proc. IEEE International Conference on Image Processing (ICIP)*, Taipei, Taiwan, 2019. [\[pdf\]](#) [\[Oral\]](#)
- 2019 J.R.H. Kumar, K. Teotia, **P. Kevin Raj**, A. Jasbon, K.V. Rajagopal and Chandra S. Seelamantula. "Automatic Segmentation of Common Carotid Artery in Longitudinal Mode Ultrasound Images Using Active Oblongs", *In Proc. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Brighton, UK, 2019. [\[pdf\]](#)

## Awards

2019 **Travel grant:** Amount of 940\$ awarded by IEEE Signal Processing Society to attend ICIP'19

## Skills & Certifications

Skills Python, HTML,  $\text{\LaTeX}$ , Pytorch, Keras, MATLAB

Certifications Image and Video Processing, by Duke **Coursera**, Digital and Signal Processing, by EPFL **Coursera** , Neural Networks and Deep Learning, Machine Learning, and Hyperparameter tuning, Regularization and Optimization, by Deeplearning.ai **Coursera**.