

# Janith Bandara Senanayaka

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## Education

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### B.Sc. Engineering (Electrical & Electronic Engineering) (Honours)

Nov. 2015 - July 2020

University of Peradeniya · Peradeniya, Sri Lanka

- Graduated with First-Class Honours.
- Final GPA 3.8 out of 4.0
- [Washington Accord] accredited four-year full-time degree.
- [Transcript] [Academic Rank Certificate] [Degree Certificate]

### G.C.E. Advanced Level Examination (University Entrance Exam)

Aug. 2014

Sri Pragnarathana Central Collage · Gelioya, Sri Lanka

- Physical science stream.
- Three distinction 'A' passes for Combined Mathematics, Physics, and Chemistry.
- Z-Score 2.6175
- Ranked 10<sup>th</sup> in Kandy District and 60<sup>th</sup> in the Country.
- [Certificate]

## Research Projects

### Computer Vision for Road Safety and Traffic Planning

Sep. 2021 - PRESENT

University of Peradeniya · Peradeniya, Sri Lanka

- Extraction of relevant information from CCTV footage using deep learning models.
- Identification of traffic rule violations.

### Computer Vision for Human Behaviour & Group Activity Monitoring

May 2021 - PRESENT

University of Peradeniya · Peradeniya, Sri Lanka

- Using deep learning and graph signal processing to identify human behaviours and group activity from CCTV footage.
- COVID threat assessment from CCTV footage.
- This project is funded by [IDRC - Canada].

### Fetal and Maternal Well-Being Monitoring During Pregnancy

Aug. 2020 - PRESENT

University of Peradeniya · Peradeniya, Sri Lanka

- Developing a non-invasive low-cost instrument that pregnant mothers can use without the expert know-how in-home to record fetal movement data and mother's respiratory signal.
- Fetal movement and mother's respiratory data collection using inertial measurement units (IMUs).
- Fetal movement detection using signal processing and deep learning methods.
- Monitoring fetal and maternal well-being using non-invasive methods.

### Digital Image Forensic Techniques for Identification of Image Tampering

June 2019 - July 2020

University of Peradeniya · Peradeniya, Sri Lanka

- Undergraduate project.
- Developed an image segmentation algorithm. [Paper][Code]
- Used image and signal processing techniques to identify image tampering.

### Error Identification and Localization in Product Labels

Oct. 2021 - PRESENT

Farbe Technologies · Colombo, Sri Lanka

- Identifying and localizing errors in printed product labels using deep learning.

## Publications

### INTERNATIONAL CONFERENCES

#### Fetal Movement Identification from Multi-Accelerometer Measurements Using Recurrent Neural Networks

Dec. 2021

16th IEEE International Conference on Industrial and Information Systems (ICIIS) 2021 · Sri Lanka

- Authors: Janith Bandara Senanayaka, Eranda Somathilake, Upekha Delay, Samitha Gunarathne, Roshan Godaliyadda, Mervyn Parakrama Ekanayake, Janaka Wijayakulasooriya and Chathura Ratnayake
- Link: <https://ieeexplore.ieee.org/document/9660747>

#### Fetal Movement Detection using Long Short-Term Memory Network

Aug. 2021

10th International Conference on Information and Automation for Sustainability (ICIAFS) 2021 · Sri Lanka

- Authors: Eranda Somathilake, Janith Bandara Senanayaka, Upekha Delay, Samitha Gunarathne, Thoshara Nawarathne, Thanushi Withanage, Roshan Godaliyadda, Mervyn Parakrama Ekanayake, Janaka Wijayakulasooriya and Chathura Ratnayake
- Link: <https://ieeexplore.ieee.org/document/9606131>

## Comprehensive Study on Denoising of Medical Images Utilizing Neural Network Based Auto-Encoder

Mar. 2021

3rd International Conference on Advanced Computational and Communication Paradigms (ICACCP) 2021 · India

- Authors: Thoshara Nawarathne, Thanushi Withanage, Samitha Gunarathne, Upekha Delay, Eranda Somathilake, Janith Bandara Senanayaka, Roshan Godaliyadda, Mervyn Parakrama Ekanayake, Chathura Ratnayake
- Link: [https://link.springer.com/chapter/10.1007/978-981-16-4369-9\\_17](https://link.springer.com/chapter/10.1007/978-981-16-4369-9_17)

## Adaptive Centroid Placement Based SNIC for Superpixel Segmentation

July 2020

Moratuwa Engineering Research Conference (MERCon) 2020 · Sri Lanka

- Authors: Janith Bandara Senanayaka, Dilshan Thilanka Morawaliyadda, Shehan Tharuka Senarath, Roshan Indika Godaliyadda and Mervyn Parakrama Ekanayake
- Link: <https://ieeexplore.ieee.org/document/9185361>
- [Code]

## JOURNAL PAPERS UNDER REVIEW

### Holistic Interpretation of Public Scenes Using Computer Vision and Temporal Graphs to Identify Social Distancing Violations

Dec. 2021

Submitted to Elsevier Sustainable Cities and Society Journal for review

- Authors: Gihan Jayatilaka, Jameel Hassan, Suren Sritharan, Janith Bandara Senanayaka, Harshana Weligampola, Roshan Godaliyadda, Parakrama Ekanayake, Vijitha Herath, Janaka Ekanayake, Samath Dharmaratne
- Link: <https://arxiv.org/abs/2112.06428>

### Assessment of Fetal and Maternal Well-Being During Pregnancy Using Passive Wearable Inertial Sensor

Nov. 2021

Submitted to IEEE Transactions on Instrumentation and Measurement for review

- Authors: Eranda Somathilake, Upekha Delay, Janith Bandara Senanayaka, Samitha Gunarathne, Roshan Godaliyadda, Mervyn Parakrama Ekanayake, Janaka Wijayakulasooriya and Chathura Ratnayake
- Link: <https://arxiv.org/abs/2111.10066>

## DATASETS

### Fetal Movement Dataset Recorded Using Four Inertial Measurement Units

Nov. 2021

Mendeley

- Contributors: Janith Bandara Senanayaka, Eranda Somathilake, Upekha Delay, Samitha Gunarathne, Roshan Godaliyadda, Mervyn Parakrama Ekanayake, Janaka Wijayakulasooriya and Chathura Ratnayake
- Link: <https://data.mendeley.com/datasets/m873dbhy9j/1>

## Experience

### Volunteering Research Assistant · University of Peradeniya · Peradeniya, Sri Lanka

Aug. 2020 - PRESENT

- Working on the project “Computer Vision for Road Safety and Traffic Planning.”
- Working on the project “Computer Vision for Human Behaviour & Group Activity Monitoring.”
- Working on the project “Fetal and Maternal Well-Being Monitoring During Pregnancy.”

### Teaching Assistant · University of Peradeniya · Peradeniya, Sri Lanka

Aug. 2020 - Dec. 2021

- Conducting laboratory sessions for undergraduates.
- Assisting professors to grade lab reports, assignments, and tutorials.
- Assigned courses are EE201 Network Analysis, EE251 Principle of Electrical Measurements, EE252 Electronic Devices and Circuits, EE253 Digital Logic Design, EE254 Electronic Instrumentation, EE257 Signals and Systems, EE322 Embedded Systems Design, EE325 Digital Signal Processing, EE357 Communication Systems, EE401/512 Communication Theory, and EE402/501 Advanced Signal Processing.
- [Appointment Letters]

### Volunteering Teaching Assistant · University of Peradeniya · Peradeniya, Sri Lanka

Feb. 2020 - Mar. 2020

- Assisting professors to conduct laboratory sessions for first years.

### Research Engineer (Internship) · CodeGen International (Pvt.) Ltd. · Colombo, Sri Lanka

Feb. 2019 - May 2019

- Worked in the unmanned ariel vehicle development project in the QBITS lab at University of Peradeniya.
- [Report]

### Electrical Engineer (Internship) · National Water Supply & Drainage Board · Kandy, Sri Lanka

Oct. 2017 - Jan. 2018

- Worked as an electrical engineer.
- [Report]

## Honours & Awards

**1st Place**, LED Cube Competition, Innovators 2016 organized by Inventors' Club, University of Peradeniya. [Certificate]

2016

**Mahapola Higher Education Merit Scholarship**, Merit based scholarship awarded by government of Sri Lanka for performance at GCE A/L examination. [Certificate]

2016

**Best Student**, Prize Giving 2012, Sri Pragnarathana Central College. [Certificate]

2012

## Extracurricular Activities

### Senior Member · University Explorers' Club, University of Peradeniya · Peradeniya, Sri Lanka

2018 - PRESENT

University Explorers' Club is the most active Nature Exploration student body for undergraduate students at the University of Peradeniya.

- Hiking with the University Explorers' Club improved team spirit and the confidence to face risky challenges.
- Participated in over 35 hiking events around Sri Lanka.
- Climbed many mountains and visited several waterfalls in Sri Lanka.
- [Certificate]

### President · Robarosiya, University of Peradeniya · Peradeniya, Sri Lanka

2019 - 2020

The aim of Robarosiya society is to share life experiences and promote peer help and the mental well-being of the undergraduates. It consists of undergraduates as well as staff members and professionals from the nine faculties in the university.

- Excellent leadership and communication skills and perfect management skills gained by working as the president of Robarosiya.
- Organized peer supporter training programme, which offers annually free of charge.
- Conducted motivation, guidance, and personality development programmes with other members for over 400 freshers.
- [Certificate]

### Secretary · IEEE Industry Application Society Chapter University of Peradeniya · Peradeniya, Sri Lanka

2019 - 2020

- Organized several events.
- [Certificate]

### Member · Art Circle - Faculty of Engineering, University of Peradeniya · Peradeniya, Sri Lanka

2018 - 2020

- Participated in Fiato-3 and Fiato-4 musical events as guitarist and many other events.
- [Certificate]

### Member · Taekwondo Team, University of Peradeniya · Peradeniya, Sri Lanka

2017 - 2020

- Taekwondo junior green belt holder.
- Won the third place in the 54kg – 58kg weight category – Inter Faculty Taekwondo Championship 2019.
- Represented the university in Sri Lankan University Games (SLUG) - 2019.
- Represented the university in Inter University Games - 2018.
- [Certificates]

### Vice President · Robarosiya, University of Peradeniya · Peradeniya, Sri Lanka

2018 - 2019

- Organized peer supporter training programme, which offers annually free of charge.
- Conducted motivation, guidance, and personality development programmes with other members for freshers.
- Conducted three days motivation, guidance, and personality development programme with other members for school students.
- [Certificate]

### Founding Committee Member · Robarosiya, University of Peradeniya · Peradeniya, Sri Lanka

2017 - 2018

- Made posters and other graphic contents to promote the society.
- [Certificate]

### Volunteer · Sasnaka Sansada · Battaramulla, Sri Lanka

2015 - PRESENT

Sasnaka Sansada is a charitable social service organization.

- Conducted over 10 ordinary level mathematics seminars for school children in Sri Lanka.

## Professional Memberships

### Associate Member · Institution of Engineers Sri Lanka (IESL) · Peradeniya, Sri Lanka

2020 - PRESENT

The Institution of Engineers, Sri Lanka is the multidisciplinary professional engineering institution in Sri Lanka.

- Membersip Number: AM-27064

### Member · Engineering Council Sri Lanka (ECSL) · Peradeniya, Sri Lanka

2020 - PRESENT

The Engineering Council of Sri Lanka is Sri Lanka's regulatory authority for registration of engineering practitioners.

- Membersip Number: 213533

### Student Member · Institute of Electrical and Electronics Engineers (IEEE) · R10 -Asia and Pacific

2019 - 2020

- Membersip Number: 95783824

## Skills

<b>Applications</b>	MATLAB, R Studio, AWR Design Environment, MPLAB®X IDE, Proteus, EAGLE, AutoCAD®, CorelDRAW, Adobe Photoshop
<b>ML Frameworks</b>	TensorFlow, PyTorch
<b>Programming</b>	Python, MATLAB, R, Java, C, PIC Assembly
<b>Word Processing</b>	LaTeX (including Tikz), Open Office, Microsoft Office
<b>Operating Systems</b>	Windows, Linux

## References

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### **Dr. G.M.R.I. Godaliyadda**

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### **Dr. M.P.B. Ekanayake**

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