Samuela Rokocakau

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Professional Summary

Industrial Engineer with 7+ years' experience in electrical systems, telecommunication, transportation and industrial automation sectors. I thrive in a team-oriented environment. I have held mid-level to senior engineering roles in my professional career, where I have taken hands-on lead roles in technical reliability maintenance, managed departmental budgets, planned for maintenance scheduling, provided technical oversight into equipment acquisition, installation and commissioning.

I enjoy providing efficient and automated workflows to every task I am given to ensure better usage of man-hours not only for myself but my team ensuring everyone works in safe and reliable environment. These are achieved through software scripts or effective planning and strong leadership.

Currently pursuing a PhD in Industrial Engineering, where my research thesis is based on diagnostics in Power Electronics utilizing AI strategies. Recently, awarded the Marie-Curie scholarship to visit ABB Corporate Research, Sweden to work with their Motions department in developing Digitilization strategies in Electrical machines and Power converters. Expected PhD thesis graduation in Q1, 2026.

Work Experience

Engineering Consultant: Industrial Automation Sep 2021 – Sep 2022
Rogo Network Pte Ltd, Fiji

- Delivered smart control systems and technical reliability support for domestic and industrial sites.
- Supported national projects for satellite internet accessibility for remote island and highland schools in Fiji.
- Licensed in LoRaWAN and Loxone automation solutions

Control Automation Engineer Jan 2020 – Aug 2021
Natural Waters of Viti (FIJI Water)

- Led commissioning and diagnostics for production line automation. Familiar with CIP skids, bottling machinery, preform, capping and packaging machinery.
- Delivered CMMS runtime reporting, product traceability systems, and downtime tracking.
- Developed reliability-centered maintenance schedules and internal training.
- Certified in SIEMENS TIA Portal Automation

Research and Teaching Assistant Jun 2017 – Dec 2019
University of the South Pacific

- Delivered labs and tutorials on industrial systems and control.

- Supported various engineering course content and supervised undergraduate projects.

Other roles:
Senior Technical Officer – LTA Fiji (2016): recommissioned national vehicle inspection system.
NOC Engineer & Field Engineer – Digicel (2012–2013): ensured 24/7 uptime for mobile/satellite systems.
Summer Internships as electrical industrial tradesman (2008–2012)

Education

Ph.D. in Industrial Engineering (Power Electronics) *Expected: Q4 2025*
University of Pavia, Italy

Thesis: AI-based Fault Diagnosis in Power Converters. Visiting Researcher at ABB, Sweden.

- Develop Deep Learning architectures for Fault Diagnostics strategies in CHB and DAB Power converters.
- Also, provide supervision for Master's thesis students.

M.Sc. in Electrical & Electronics Engineering 2016 – 2019
University of the South Pacific, Fiji

Thesis: Flywheel Energy Storage System for Smart Grid in Pacific Island Countries

- Development of a mechanical rotational battery support system for isolated grids.
- Selected for an EU-funded project in partnership with the Fiji Government.

B.Eng. in Electrical & Electronics 2013 – 2016
University of the South Pacific, Fiji

Thesis: Hydrophone Development for Spinner Dolphin Monitoring

Diploma & Advanced Diploma in Electrical & Electronics 2010 – 2011
Fiji National University

Technical Skills

- Reliability and Maintenance Engineering
- Development of Machine Learning and Deep learning for diagnostics workflow
- Research and apply best practices to improve asset reliability
- Conduct root cause failure analysis on electrical and instrumentation systems
- Professional Proficiency for Industrial and domestic electrical wiring, and schematics
- Develop and review preventive maintenance (PM) tasks for electrical and instrumentation systems
- Familiar with Lean Six Sigma and 5S Continuous Improvement
- Development of training, and personnel
- Python, MATLAB, Powershell, C++ Scripting
- Simulink Modelling
- Git / GitHub
- PLCs: Siemens, Schneider, Omron
- Professional Spoken and Written Proficiency in English, Fijian
- Basic Proficiency in spoken Italian

Academic Research Publications

Journal Papers

- **S. Rokocakau** et al., "Fault Diagnosis Using Shallow Neural Networks for Voltage Source Inverters in Motor Drives," in IEEE Transactions on Industry Applications, vol. 60, no. 5, pp. 7038-7047, Sept.-Oct. 2024, doi: 10.1109/TIA.2024.3409513.
- "Volpini, A.; **Rokocakau, S.**; Tresca, G.; Gemma, F.; Zanchetta, P. ANN-Enhanced Modulated Model Predictive Control for AC-DC Converters in Grid-Connected Battery Systems. Energies 2025, 18, 3996. https://doi.org/10.3390/en18153996", *Energies*, 2025.

Conference Papers

- **S. Rokocakau**, H. Mudaliar, D. Kumar, D. Aitchison, M. Cirrincione and A. Mohammadi, "A Flywheel Energy Storage System in a Microgrid for Powering Small Villages in Remote Islands in the South Pacific," 2019 IEEE International Conference on Industrial Technology (ICIT), Melbourne, VIC, Australia, 2019, pp. 338-342, doi: 10.1109/ICIT.2019.8754984.
- H. K. Mudaliar, D.M.Kumar **S. Rokocakau** et al., "FPGA-Based Multi-Parametric Non-Linear Model Predictive Control for a Micro-Grid in Small Islands," 2018 21st International Conference on Electrical Machines and Systems (ICEMS), Jeju, Korea (South), 2018, pp. 1995-1999, doi: 10.23919/ICEMS.2018.8549425.
- **S. Rokocakau** et al., "Fault Detection in Cascaded H-Bridge Inverters using Spectrogram Analysis and Convolutional Neural Networks," 2023 International Aegean Conference on Electrical Machines and Power Electronics (ACEMP) & 2023 International Conference on Optimization of Electrical and Electronic Equipment (OPTIM), Istanbul, Turkiye, 2023, pp. 1-6, doi: 10.1109/ACEMP-OPTIM57845.2023.10287070.
- **S. Rokocakau**, G. Tresca, F. Shamsazad, P. Zanchetta, G. Cirrincione and M. Cirrincione, "An Optimized Rotational Position Encoding for 1-D Convolutional Transformer Hybrid Neural Network Fault Diagnosis on Power Converters," 2025 IEEE Industry Applications Society Annual Meeting (IAS), Taipei, Taiwan, 2025, pp. 1-7, doi: 10.1109/IAS62731.2025.11061433.
- **S. Rokocakau** , G. Tresca, B. Mohammadzadeh, P. Zanchetta, G. Cirrincione and M. Cirrincione, "A Novel use of 1-D Convolutional Transformer Neural Network Model in CHB Motor Drive Fault Diagnosis," 2024 IEEE Energy Conversion Congress and Exposition (ECCE), Phoenix, AZ, USA, 2024, pp. 3716-3722, doi: 10.1109/ECCE55643.2024.10860802.
- **S. Rokocakau**, G. Tresca, B. Mohammadzadeh, P. Zanchetta, G. Cirrincione and M. Cirrincione, "Fault Diagnosis using 1-D Convolutional Transformer Hybrid Neural Network for Cascaded H-Bridge Converters," 2024 IEEE Energy Conversion Congress and Exposition (ECCE), Phoenix, AZ, USA, 2024, pp. 3729-3736, doi: 10.1109/ECCE55643.2024.10861135.
- F. Shamsazad, **S. Rokocakau**, A. Volpini, G. Tresca and P. Zanchetta, "A Data-Driven Fault Diagnostics Approach for Dual Active Bridge Converters," 2025 IEEE Industry Applications Society Annual Meeting (IAS), Taipei, Taiwan, 2025, pp. 1-8, doi: 10.1109/IAS62731.2025.11061511.

References

Available upon request.