

# POSTGRADUATE PERSONAL STATEMENT EXAMPLE

## ELECTRICAL ENGINEERING

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### **Personal Statement Example: Electrical Engineering**

Whilst my primary school friends were instructed by their parents to recite poems, I was asked by my father to dismantle our broken television. Circuits, electronics and signals were some of the most repeated words in my household, and I grew to enjoy the disassembly and rebuilding of gadgets more than playing with traditional toys. The sense of achievement I experienced whenever I repaired a radio or a lamp was far greater than my pride when scoring top marks in school tests. This ongoing interest in understanding how and why things work led me to study Electronic Information Engineering at Marshall University. I look forward to continuing my education in the Electrical Engineering program at the University of Buckley.

My undergraduate curriculum encompassed various computer science and electronic engineering topics, providing a solid foundation for this MS degree. Electrical engineering taught me valuable hardware-related knowledge, including a thorough understanding of analogue, digital and radio frequency circuits and signal processing. I also gained numerous computer programming capabilities and skills and am well-versed in analysing and developing data structures and using essential software packages such as C, Python and MATLAB. These courses enabled me to understand the working principles of computer modules and taught me how to realise and verify ideas through experiments and simulations. As my undergraduate study emphasised theory and application, I completed courses that trained me in experimental design and transferable skills such as problem-solving and organisation every semester. I was guided through this process by expert professors who taught me how to combine hardware and software skills. This helped me realise that both algorithmic development and programming are necessary for pursuing electrical engineering. Consequently, I chose to take an artificial intelligence course and extended my machine learning and programming proficiency through multiple research opportunities.

Joining a research program on the Mars Rover Exploration in the Computer Image Recognition Lab at Slater University, I was tasked with applying artificial intelligence to upgrade the operations of the traditional manned rover. This led me to research topics in artificial intelligence and trained me to search for academic references from a scientific

perspective. At the same time, I applied to be an undergraduate research assistant to Dr Lorna May, who was working on a project using comparative learning in computer vision to develop an intelligent recognition system for fruit and vegetables. Having summarised the basic framework, we utilised positive and negative examples for comparative machine learning before achieving state-of-the-art accuracy. I contributed to the framework establishment and patent writing, which was subsequently published.

I actively requested to conduct an independent research project on the ion transmission rate of the grid: research which resonates with this application due to its emphasis on simulation. After completing the modelling using Solidworks and analysing the geometric structure, I completed an online course on simulation software. I mastered COMSOL and Simion before employing them to conduct research which helped me verify my conclusions. I am currently using MATLAB to help analyse the data and prepare my final paper. These experiences allowed me to reproduce the recognition system using a given database, refine my scientific writing skills and, most importantly, become intimately familiar with theories and techniques in computer vision, preparing me comprehensively for graduate study.

Having read numerous papers by renowned professors working in cutting-edge fields, I was inspired to work with them to further my understanding and expertise. I was lucky to have the opportunity to attend the Machine Learning and Data Analysis academic research program led by Professor Peter Lumley from Parks University. This program improved my use of machine learning methods, and I developed a deeper understanding of the cross branch of Computer Science and Electrical Engineering. Professor Lumley lectured on machine learning topics, including exploratory data analysis, clustering and prediction using decision trees. I took the opportunity to engage in case studies where I processed large datasets in Python. Under his supervision, I led a five-member group to research data fusion, conducted a comparative analysis of the popular Matrix Factorization or Neural Collaborative Factorization-based algorithms like Doubly Robust Models, and conducted the subsequent theoretical analysis. Together we analysed estimators, including IPS, SNIPS and DR, reproducing codes and developing a successful optimisation method. As a team leader, I contributed to team dynamics, collaborated successfully with my peers and learned how to manage and coordinate work. The 4th International Conference on Computing and Data Science subsequently accepted our group paper.

As a result of my research and practical exploration, I have developed a significant interest in topics including computer vision, image processing and natural language processing, which are established through signal processing. I aim to examine these disciplines at a high level by pursuing a graduate program in Electrical Engineering at the University of Buckley. One of the top programs in the world, the course offers unparalleled research resources and collaborative opportunities with renowned professors who are at the cutting edge of challenging and interesting topics that directly align with my interests. I am keen to take advantage of the program's Computer Engineering focus. I am attracted by the Embedded Systems and Data Mining courses, which will advance my abilities in data analysis and applications through using single-chip micropy. I found the papers outlining the department faculty and Professor Marcie Jackson's research projects on sensors particularly fascinating. I would be honoured to work under his guidance and help find new approaches to vision sensors that detect features such as motion, line orientation, line stops and polarisation differences.

I aim to bring vitality and diversity to the Buckley community. Since high school, I have actively participated in volunteer activities, organising several events for disabled groups. I am interested in contributing to the Committee for Diversity, Equity and Inclusion and would like to help those in need. In college, I have contributed to four courses as a student assistant, have strong classroom management skills and am adept at improving student performance. Consequently, I would be pleased to offer my services as a TA or RA. At Buckley, I will fully devote myself to graduate study, follow my tremendous passion for research and prepare to reach my academic goal of becoming a PhD candidate. My ultimate goal is to join a research institute or a university, lay the foundations for a college teaching career and go on to make valuable breakthroughs in my field. I look forward to joining the Buckley community, playing an active and positive role as a valued faculty member, and contributing to a mutually enriching academic and research experience.

