**Graham Peyton**

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| graham@peyton.co.za | +1 203 993 2872 | US Permanent Resident | Residence: CT, USA |

Engineering leader with 8+ years of experience working in the medical device industry and four degrees in biomedical/electrical engineering. Experienced in leading and working with cross-functional engineering teams as a manager and individual contributor. Expert in analog/mixed signal ASIC design, analog & digital electronics, PCB & package design/modeling and manufacturing, wireless systems, imaging/instrumentation/measurement systems & algorithms, and software development. Efficient and goal-oriented work ethic with a track history of success.

**Education and Research Experience**

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| 2014-2017 | **Imperial College London, UK**  *PhD, Bioengineering,* *Bio-inspired VLSI Circuits & Systems Group, Imperial College London*   * Proposed, developed and patented a highly miniaturised ultrasound imaging system using quadrature synthetic aperture beamforming. This includes development of a custom AFE, digital beamformer (FPGA-based), PCB and software post-processor. |
| 2013  2011-2012   2008-2010 | **University of the Witwatersrand, South Africa**  **MSc(Eng)**, Master of Science in Engineering (*cum laude*), 2013   * *Thesis*: multivariate signal processing techniques for analyzing magnetoencephalography signals that characterize the spatiotemporal dynamics of the brain during decision making.   **BScEng(Elec)**, Electrical Engineering (*summa cum laude*), 2011-2012   * *Thesis*: EEG brain-computer interface enhanced by means of an SSVEP “brain switch.”   **BEngSc(BME)**, Biomedical Engineering (*summa cum laude*), 2008-2010   * *Thesis*: designed and built a pulse oximeter. |

**Professional Experience**

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| May 2019 - Present  Nov 2020 – March 2021  2017-2020 | **Electrical Engineering Lead** at Liminal Sciences Inc.   * Started out as part-time consultant until moving over full-time to lead development of next-gen, wearable medical imaging hardware and supporting firmware. * Own the entire PCBA design cycle; architecture definition, component selection, schematic capture, simulation, layout, PCB signal and power integrity, DFM/DFT, bring-up, verification, environmental and EMC compliance, integration and manufacturing NPI. * Key contributor to company R&D and hiring strategy. * Hiring manager for multiple hardware/firmware positions.   **Principal Imaging Engineer** at Butterfly Network Inc.   * Imaging lead for optimization of multiple imaging presets and panoramic development. * Collaborating with clinical team to assess clinical performance and regulatory compliance. * Developed supporting software infrastructure in Python/C++.   **Analog/Mixed-Signal ASIC Engineer** at Butterfly Network Inc.   * Single-handedly designed, layed out and tested OTP (eFuse) memory block. * Designed and layed out 5GHz SerDes TX link, LVDS drivers. * Advanced BGA and wafer-level packaging design and modeling (TSMC InFO). * Longevity testing, verification & validation, chip-level characterization, board bringup. * Embedded work on a wireless prototype. |
| 2016-2017 | **Founder** at *Microsonix*.   * Led team in developing miniaturized ultrasound imaging device for low-resource settings. * Winner of the 2017 Venture Catalyst Challenge (VCC), the UK's largest university innovation programme & competition. Gained significant media attention and w*on £10k company seed funding*. |
| 2016-017 | **Consultant** at *Oxbridge Biotech Roundtable* to *Roche Diagnostics*   * Proposed strategic enterprise-level healthcare IT solutions for emerging ecosystems. * Led a multidisciplinary team and presented to C-level management at company HQ in Basel, Switzerland. |
| 2012-2016 | **Supervisory Experience**   * *MSc supervisor,* Vasilina Stergiopoulou, University of Patras * *Undergraduate Project Supervisor*, Imperial College London. * *Sessional Lecturer*, Wits University. * *Graduate Teaching Assistant* for various biomedical and electrical engineering courses. |
| 2012-2013 | **Financial Analytics Consultant** at think3dots consulting (Pty) Ltd., South Africa  Used unsupervised machine learning to predict the profitability of potential cell phone customers, based on historical data. |
| 2011-2012 | **Intern Research Engineer**, RoJo Medical Technology Engineering, a startup medical devices company based in Johannesburg, South Africa. Spearheaded work on developing a mobile, Bluetooth-enabled sensor ideally suited to rural environments. |
| 2010-2011 | **Student Engineer** atESKOM, South Africa’s largest electricity supplier. Responsible for developing a lightning impulse impedance meter for transmission tower ground electrodes. |

**Tools and Skills**

* Virtuoso; APS/Spectre tools; Calibre tools (DRC, LVS, PEX), Sigrity/Clarity 3D modeling, Virtuoso RF
* Familiar with digital tools RTL Compiler/Genus, Encounter/Innovus,
* Altium/Eagle PCB design
* Python, C, C++, MATLAB, Java, OCEAN, TCL, SKILL; familiar with OpenCL and parallel computing in MPI.
* Verilog/VHDL; FPGA development and debugging tools.
* Wireless protocols: MQTT, WiFi 802.11, Bluetooth

**Patents**

* Wireless ultrasound architectures, H Soleimani, G Peyton, NJ Sanchez, US Patent App. 16/836,497
* Wireless ultrasound device and related apparatus and methods, K Ersson, L Spector, H Soleimani, G Peyton, US Patent App. 16/838,883
* Methods and apparatuses for offloading ultrasound data, JM Rothberg, TS Ralston, NJ Sanchez, J Martin, G Peyton, H Soleimani, US Patent App. 16/379,093
* G Peyton, Miniaturised Wireless Ultrasound System – UK patent gb1621423, filed Dec 16, 2016

**Publications**

* Nevada Sanchez, Kailiang Chen, **Graham Peyton**, et al., An 8960-Element Ultrasound-on-Chip for Point-of-Care Ultrasound, IEEE International Solid-State Circuits Conference (ISSCC), 2021.
* **G. Peyton**, B. Farzaneh, H. Soleimani, M.G. Boutelle, E.M. Drakakis, “Quadrature Synthetic Aperture Beamforming Front-End for Miniaturised Ultrasound Imaging”, IEEE Transactions on Biomedical Circuits and Systems, 2018
* **G. Peyton**, M.G. Boutelle, E.M. Drakakis, “Comparison of Synthetic Aperture Architectures for Miniaturised Ultrasound Imaging Front-Ends”, BioMedical Engineering Online, 2018.
* **G. Peyton**, M.G. Boutelle, E.M. Drakakis, “Front-End Receiver Architecture for Miniaturised Ultrasound Imaging”, The 3rd World Congress on Electrical Engineering and Computer Systems and Science), DOI: 10.11159/icbes17.133, 2017.
* **G. Peyton,** “Front-End Receiver for Miniaturised Ultrasound Imaging”, PhD thesis, Imperial College London, 2018.
* **G. Peyton**, D. M. Rubin, A. Pantanowitz, A. Kleks, M. Teicher, “Analysis of MEG Signals for Selective Arithmetic Tasks”, XIV Mediterranean Conference on Medical and Biological Engineering and Computing, January 2016.
* **G. Peyton**, R. Hoehler, A. Pantanowitz. "Hybrid BCI for Controlling a Robotic Arm over an IP Network." 6th European Conference of the International Federation for Medical and Biological Engineering, 2015.
* **G. Peyton, “**Analysis of MEG Signals for Selective Arithmetic Tasks”, MSc thesis, University of the Witwatersrand, Johannesburg, South Africa, 2014.

**Academic Honours and Awards**

* **President’s Imperial College PhD Scholarship** (2014-2017): full PhD scholarship covering tuition fees, stipend and research expenditure (total £50550 per annum), offered to the top ~1% of global applicants
* Winner of the 2017 **Venture Catalyst Challenge** (VCC), the UK's largest university innovation programme & competition. Won £10k company seed funding for an ultrasound imaging startup.
* Awarded South African **National Research Fund** (NRF) scholarship in 2013 for postgraduate studies – national scholarship award for outstanding students in engineering.
* **SAIMM Prestige Prize**: best student in the faculty across **all engineering disciplines** (2012), Wits University
* **Bernard Price Prize (Electrical)**: most distinguished final year student in Electrical Engineering (2012), Wits University
* **Altron Electronic Engineering Prize**: best student in Electronic Engineering in final year (2012), Wits University
* **Schneider Automation Student Award**: final year student who attained the best performance in 'Measurement and Control' (2012), Wits University
* **Colin G Caro Award**: Most distinguished Biomedical Engineering Student (2010), Wits University
* Dean's list (top 10% of academic achievers), 2008 - 2012, Wits University
* Supported by merit award scholarships from 2008-2009 at Wits University.
* Winner of the 2007 National Pipe Band Championship. My participation was as the drum corp. leading tip.