(225) 333-6593 • 14827 Preston Rd Apt 616 Dallas, TX 75254 • malcolmst@gmail.com

Malcolm Stagg

FOCUS

I have been passionate about electronics for many years, and have interests in various fields including artificial intelligence, circuit design, robotics, computer vision, software-defined radio, and reverse-engineering. I am currently self-employed and am focused on independent research projects where I can apply innovative solutions to meaningful and difficult problems.

WORK EXPERIENCE

Founder — **SODIUM-24, LLC** — **Dallas, TX** — Nov 2019-Present

Founded SODIUM-24, LLC for further commercial development of projects stemming from DARPA SC2, SubT, and other interests, and to perform hardware/software consulting work.

Red Team Member — **Synack Red Team** — **Dallas, TX** — July 2020-Present

Hunting for security vulnerabilities on various targets as a freelance security researcher.

Team Lead — **Team SODIUM-24 Robotics** — *DARPA Subterranean Challenge (SubT)* — **Dallas, TX** — Mar 2019-Present

Developed algorithms for distributed exploration, mapping, obstacle avoidance, and artifact localization using data from cameras, IMU, and LIDAR in a GPS-denied and communication-impaired subterranean environment. Built robot controller software in C++ and Python with the ROS (Robot Operating System) framework. Placed 3rd in the Virtual Tunnel Circuit (2nd out of self-funded teams) as the only one-man team.

Team Lead — **Team SODIUM-24** — *DARPA Spectrum Collaboration Challenge (SC2)* — **Redmond, WA / Dallas, TX** — Feb 2017-Oct 2019

Built a Software Defined Radio design achieving high throughput between radio nodes. Developed innovative reinforcement learning models for optimizing parameters based on interference and peer performance. Made significant contributions to the shared Collaborative Intelligent Radio Network (CIRN) Interaction Language (CIL) and took a leadership role in the CIL Council (CILC) where ideas for information sharing between radio networks were proposed. Built custom tools for data analysis including a website for automated analysis, and contributed public tools for validating reported CIL data. Placed 12th place out of 30 teams in Phase 1 and 2, and was a top-ten finalist and the only one-man team to compete in the SC2 Championship Event in Los Angeles on Oct. 23, 2019.

Software Engineer II — **Microsoft Corporation** — **Redmond, WA** — Feb 2014-Dec 2017

Software Engineer on the Remote Desktop team. Worked on network transport development, testing, and debugging for Remote Desktop. Wrote public documentation for various RDP (Remote Desktop Protocol) protocol features. Worked with a small team of engineers to develop a full-featured HTML5 Remote Desktop Web Client.

SDET Intern — **Microsoft Corporation** — **Redmond, WA** — May 2013-Aug 2013

Worked on a project for the RDV (Remote Desktop Virtualization) team to gather data from several network status change event sources for various network disruption scenarios to determine how Remote Desktop Client (RDC) currently handles auto-reconnect on these scenarios. Created an automated test setup with hardware and software to automatically gather and parse this performance data.

Student Worker — **Louisiana State University** — **Baton Rouge, LA** — May 2011-May 2013, Aug 2013-Dec 2013

Worked with a research group in the Robotics Research Lab on a project funded under the VIRAT (Video Image Retrieval and Analysis Tool) program of DARPA (Defense Advanced Research Projects Agency) for detecting activities in streaming video. Developed algorithms for detecting human activities with regular expressions in MATLAB and the design and development of a C++ object tracker using OpenCV.

Programmer — **Auton Engineering, Ltd.** — **Sundre, AB, Canada** — 2004 – 2008

Developed PIC microcontroller C code for mobile units for cement truck monitoring, including a custom UDP/IP stack optimized for the controller, and secure password authentication. Built a user interface with live GPS and truck data shown on a MapPoint map, allowing the user to perform data requests, data logging, unit setup, and other networking features.

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EDUCATION

Aug 2009 – Dec 2013 **Louisiana State University** **Baton Rouge, LA**

Electrical and Computer Engineering
Computer Science Minor
College Honors
GPA: **4.0**

PUBLICATIONS

M. Karki, S. Basu, R. DiBiano, S. Mukhopadhyay, J. Weltman, M. Stagg, "A symbolic framework for recognizing activities in full motion surveillance videos", *2016 IEEE Symposium Series on Computational Intelligence (SSCI)*, Athens, 2016, pp. 1-7.

S. Basu, R. DiBiano, M. Karki, M. Stagg, J. Weltman, S. Mukhopadhyay, S. Ganguly, "An Agile Framework for Real-Time Motion Tracking", *2015 IEEE 39th Annual Computer Software and Applications Conference*, Taichung, 2015, pp. 205-210.

S. Basu, M. Karki, M. Stagg, R. DiBiano, S. Ganguly, S. Mukhopadhyay, "MAPTrack – A Probabilistic Real Time Tracking Framework by Integrating Motion, Appearance and Position Models", *10th International Conference on Computer Vision Theory and Applications (VISAPP 2015)*, Berlin, 2015.

M. Stagg and S. Rai, "Comparison of Adaptive Neural Classification Techniques", *28th International Conference on Computers and Their Applications 2013 (CATA 2013),* Honolulu, 2013.

AWARDS AND ACHIEVEMENTS

Oct. 2019 Received the **DARPA Subterranean Challenge Virtual Tunnel Circuit 3rd Place** award

Oct. 2019 **Top-10 finalist** in the **DARPA Spectrum Collaboration Challenge Championship Event**

Dec. 2013 Received the **University Medal** for graduating with the highest GPA at LSU, and the **Edward McLaughlin Dean's Medal** for graduating with the highest GPA in Engineering

Nov. 2011 Received **Computing Research Association's Undergraduate Research Award (Honorable Mention)** for work done on the VIRAT project

Oct. 2011 Received **LSU Sophomore Honors Distinction** resulting from high honors grades

Undergraduate Scholarships

Nov. 2013 Received **Chevron** Electrical & Computer Engineering Scholarship

Nov. 2012 Received **Chevron** Electrical & Computer Engineering Scholarship

Sep. 2011 Received **Les and Dot Broussard** Electrical & Computer Engineering Scholarship

Mar. 2009 **Golden Oaks Scholarship** (full-tuition) to Louisiana State University

International Science and Engineering Fair

May 2005 *VLSI Object Recognition Trainable Embedded CMOS System* Phoenix, AZ
4th place in Computer Science category
3rd place Eastman Kodak Award

Canada Wide Science Fair

May 2007 *Distributed Robotics: An Intelligent System* Truro, NS
Silver medal in Engineering and Automotive
Statistical Society of Canada Award

May 2006 *A Dynamic Analog Concurrently-Processed Adaptive Chip* Saguenay, QC
Silver medal in Engineering, Bronze in Automotive
Placed on **Team Canada** (16 students nationally)

May 2005 *VLSI Object Recognition Trainable Embedded CMOS System*
Placed on **Team Canada** (12 students nationally)

May 2004 *Development of a 3D Robot Visual System* St. John's, NL
Bronze medal in Computer Science and Engineering
Petro Canada Peer Innovation Award (peer-nominated)

May 2003 *Evaluation of 3D Object Recognition Methods* Calgary, AB
Gold medal in Computer & Mathematical Sciences
Canadian Mathematical Society Award
Petro Canada Peer Innovation Award (peer-nominated)

Canada Wide Virtual Science Fair

May 2007 **Two Summa Cum Laude Awards** (highest ranking project in the fair)

May 2006 **Summa Cum Laude in Engineering/Computer Science**

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	Bell Canada Visual Award
May 2005	**Summa Cum Laude Award** (highest ranking project in the fair)
	Microsoft Canada Top of the Computer Science Award
May 2004	**Summa Cum Laude Award**

Calgary Youth Science Fair

Mar. 2007	**Nortel Networks Innovation and Technology Award**
	APEGGA Award for Engineering
Mar. 2006	**Schulich School of Engineering Award First Place**
Mar. 2005	**Noel Bourget (Auto-Trol Technology) Award**
	Nortel Networks Innovation and Technology Award
Mar. 2004	**Top Intermediate Award**
	Noel Bourget (Auto-Trol Technology) Award
	Nortel Networks Innovation and Technology Award
Mar. 2003	**Pacific Institute of the Mathematical Sciences Award**

CERTIFICATIONS

Spring 2005 — Basic Amateur Radio License (VA6MCS) — Calgary, AB

REFERENCES

References are available on request.