Andrea Taguinod

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Education

Carleton University Ottawa, Ontario

Bachelor of Engineering, Communication Engineering — 4th Year *Expected Graduation: April 2027*

Relevant Courses: Object Oriented Programming, Imperative Programming, Computer Organization & Architecture, Communication Theory (I, II), Signal & Systems, Computer Networks, Electronics (I, II, III), Communication Software

Skills

Languages:	C, Python, Java, JavaScript, MATLAB, HTML/CSS, SQL, Go, Racket
Technologies:	Linux, Network Protocols, SDN, OpenDaylight, Ryu
Concentrations:	Signal Processing, Modulation Techniques
Tools & Software:	MATLAB Simulink, Git, VS Code, IntelliJ, Bash, Wireshark, LTspice, Ansys

Projects

SDN Congestion Control in Mininet | Python, Mininet, SDN, OpenFlow, Ryu

- Built an **SDN-based** congestion control prototype using **Mininet** to emulate network topologies.
- Implemented controller logic to monitor flow metrics and adjust routing under load.
- Evaluated throughput and latency improvements across congested scenarios.

Wireless Channel Propagation Analyzer | MATLAB, Wireless Communications, Path Loss

- Developed propagation models to simulate signal attenuation in various wireless environments.
- Implemented **Friis transmission equation** and log-distance path loss models for coverage analysis.
- Analyzed fading characteristics and optimized antenna placement for maximum signal strength.

Multipath Interference Mitigation | Python, OFDM, Equalization, DSP

- Implemented adaptive equalization techniques to combat multipath fading in wireless channels.
- Applied **OFDM** modulation with cyclic prefix to reduce inter-symbol interference.
- Achieved **30%** improvement in bit error rate under severe multipath conditions.

Acoustic Digital Messaging | MATLAB, Signal Processing, BPSK, Audio Transmission

- Built an acoustic communication system in MATLAB to transmit digital messages using **Binary Phase Shift Keying (BPSK)**-modulated sound waves.
- Implemented modulator and demodulator for BPSK signals enabling end-to-end digital communication.
- Achieved over **95%** bit accuracy in noisy conditions using synchronization and matched filtering.

Network Packet Sniffer | C, Libpcap, Packet Filtering

- Developed a packet sniffer in C using sockets to capture and analyze live **TCP/UDP** packets.
- Implemented advanced packet filtering based on IP address, port number, and protocol type.
- Achieved real-time packet capture with minimal overhead by leveraging non-blocking **I/O**.

Volunteer Experience

OEC-CIC Volunteer 2025 - Present

Ontario Engineering Competition *Ottawa, ON / In-Person*

- Supported event logistics and coordination for competition activities.
- Assisted teams, judges, and organizers to ensure smooth competition flow.

CUSA Women's Centre 2022 - Present

Carleton University *Ottawa, ON / In-Person*

- Supported initiatives focused on gender equity, student wellbeing, and community outreach on campus.
- Helped organize workshops and events that addressed topics like consent, empowerment, and mental health.

Member, IEEE (Institute of Electrical and Electronics Engineers) 2025 – Present

Ottawa Section *Ottawa, ON / In-Person*

- Joined the world's largest technical professional organization to stay current with advancements in electrical and computer engineering.
- Engaged with IEEE student branch activities and accessed professional development resources and publications.