

# Duncan Joly

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## Objective

- Motivated, accomplished leader with experience in spacecraft communications and industry/academic collaboration seeking a summer internship in computer science

## Education

### **Bachelor of Science in Computer Science**

Expected Fall 2025

College of Science and Engineering, University of Minnesota - Twin Cities, Minneapolis, MN

- Related coursework: Python, C, algorithms and data structures, computer networks, linear algebra, machine architecture, program design
- 3.55 GPA

## Select Work Experience

### **Communications Subteam Leader - U of MN Small Satellite Research Laboratory - Minneapolis, MN**

February 2024 - Present

- Implemented data transfer between spacecraft and ground station network using UDP packets in GNURadio
- Worked with industry and governmental space communications experts to insure reliability of all software interfaces
- Managed communications team of 8, including undergraduate volunteers, satellite project managers, and former NASA employees
- Designed and implemented persistent Point-to-Point Protocol link over RS-232/UART using pppd and systemd

### **Undergraduate Research Fellow - U of MN Networking Research Group - Minneapolis, MN**

February 2023 - Present

- Implemented pathway for live parameter customization in simulated 5G network using Eurecom's OpenAirInterface and FlexRIC
- Conducted networking efficiency research project using Python, published findings on arXiv ([arXiv:2311.10936](https://arxiv.org/abs/2311.10936))
- Contributed to the Linux kernel and open-source research software platforms including OpenAirInterface and FlexRIC
- Assisted Ph.D. students with data analysis, software engineering, and system configuration for academic research papers
- Accepted National Science Foundation "Research Experiences for Undergraduates" grant to continue research
- Developed technical research skills including literature reviews, project management, professional teamwork, and data analysis

### **Student A/V Technician - University of Minnesota - Minneapolis, MN**

September 2022 - Present

- Operated audio/visual equipment for events on campus, including research presentations, remote conferences, and film nights
- Assisted with equipment setup and operation and provided troubleshooting assistance to various clients

## Leadership and Volunteer Experience

### **Spoke Maintainer, National Tech Committee Member - Democratic Socialists of America - Minneapolis, MN**

July 2021 - Present

- Designed, drafted, and implemented vetting process at the national level of the organization for future volunteers
- Maintained chapter Spoke deployment (mass-texting service) which contained contact information for over 1200 members

### **Leader - Hack Club - Roseville, MN**

September 2021 - June 2022

- Designed curriculum for and provided support to 20-member chapter of Hack Club
- Instructed members on penetration testing techniques, including Kali Linux and Aircrack-ng, and use of GitHub and VS Code
- Created practice problems and example projects for members in Python and Java

### **Social Media/Tech Leader, Leadership Committee Member - RAHS Progressives - Roseville, MN**

Summer 2021 - Spring 2022

- Facilitated meetings with group members and local government officials, planned events, and recruited over 10 members
- Managed several social media pages and a website, along with online resources such as Slack and Google Suite
- Educated fellow high school students on politics and community opportunities in the Roseville and Minneapolis, MN areas

### **Founding Member, Policy Review Group Leader - ISD#623 LGBTQ+ Equity Committee - Roseville, MN**

Spring 2021 - Spring 2022

- Created and participated in committee focused on LGBTQ+ inclusion in district schools
- Facilitated partnership between teachers, school board members, and district administration to draft inclusion policy

## Skills and Interests

- **Technical:** 5G, amateur radio (general-class amateur operator), bash, CLion, Git, GitHub, Google Workspace, IntelliJ IDEA, Microsoft Office, Microsoft Windows, network architecture, OpenAirInterface, Postman, PyCharm, software engineering, space communications, TCP/IP, UDP, Wireshark
- **Programming languages:** C, Java, Python 3
- **Foreign languages:** Modern Standard Arabic (Intermediate level), French (Intermediate level)
- **Professional associations:** Association for Computing Machinery (ACM), ACM SIGCOMM, ACM SIGMOBILE, Institute of Electrical and Electronics Engineers (IEEE), IEEE ComSoc
- **Interests:** Human rights, network & data security, RF, sustainability, trust establishment, wired & wireless (esp. 5G) telecommunications