

# Kaaira Gupta

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## EDUCATION

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<b>Indian Institute of Technology, Roorkee (IIT-R)</b> <i>Dual-Degree; Bachelor of Technology and Master of Technology</i>	8.78 CGPA <i>July 2018 – May 2023 (expected)</i>
<b>St. Fidelis Sr Sec School (CBSE)</b> <i>Physics, Chemistry, Mathematics</i>	12th: 90.8%   10th: 10 CGPA <i>April. 2004 – May 2018</i>

## EXPERIENCE

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<b>Google Summer of Code 2021</b> <i>Remote</i>	May 2021 – present
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- Working with **TianoCore** for the summer of 2021 to build a Board following minimum platform specifications for QEMU

<b>Linux Kernel Intern (Outreachy Intern)   <a href="#">link</a></b> <i>Remote</i>	May 2020 – August 2020
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- Designed and programmed the functionality of **multiple streams in the Virtual Media Controller Driver (VIMC)** of Linux kernel which provided extended testing of complex camera use cases and helped libcamera, an open-source camera stack, and to emulate multiple streams testing.
- Utilised the aforementioned multiple streams of VIMC and introduced **VIMC pipeline in libcamera** with two or more streams' support, including the RAW streams.
- Enhanced the VIMC pipeline to **support edge cases** for multiple streams where input was ambiguous.
- Developed user controls in VIMC** to overlay image and stream information on the tpg generated output to help debug format errors for testers. This also helped camera developers to rectify frame errors.
- Changed input and output of Pixel Formats to their respective FourCCs and libcamera-specific format names instead of their hex values, which simplified terminal testing of libcamera and greatly reduced debugging time for format errors within libcamera.
- Discussed, tested, and debugged several other issues related to file installation location in libcamera.

## PROJECTS

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<b>JP Morgan Quant Mentorship Program   <i>Quantitative Finance</i></b>	May 2021 – Present
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- Selected amongst 35 students from all over India for one year Quant Mentorship by JP Morgan.
- Studying and doing projects on the applications of Mathematical Modelling and coding in the Finance Industry.

<b>Chatbot for IIT-R website   <i>Django, RASA</i></b>	Dec 2020 – Jan 2021
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- Lead the development of **Django back-end** for a chatbot designed for the website of IIT Roorkee.

<b>Medical Image Segmentation   <i>Deep Learning</i></b>	Jan 2020 – April 2020
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- Experimented harnessing **Generative Adversarial Networks, Transfer Learning and U-Nets** for breast cell image segmentation in **PyTorch** framework to reduce manual labour for image annotation.
- Trained unannotated tiff images on a DC-GAN network and transferred the weights to the corresponding U-Net that uses the Discriminator and Generator as Encoder and Decoder respectively. We could get fairly good results using just 50-70 annotated images but training time and computation was very expensive hence, it had to be terminated. Using good computational resources this technique can reduce manual labour manifold.

<b>Convocation app IIT Roorkee   <i>Cross Platform App   <a href="#">link</a></i></b>	Aug 2019 – Sept 2019
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- Developed a cross-platform app, using **Flutter** for the Convocation Ceremony 2019 of IIT Roorkee.

<b>Traffic Assistance System   <i>IoT   <a href="#">link</a></i></b>	Feb 2019
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- Developed an IoT product using **OpenCV, Android and Google Firebase** to solve the traffic congestion problems in smart cities of India
- Designed an algorithm to create a pseudo-green way for emergency vehicles.

<b>Geek Tree   <i>Android   <a href="#">link</a></i></b>	Dec 2018 – Jan 2019
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- Built an android application using **Firebase and Kotlin**, with the implementation of **MVVM** architecture.
- The app helps to connect the students with peers of similar interests.

## SKILLS

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**Technical Skills:** C, C++, Kotlin, Python, Git, Docker, Vim, Doxygen

**Extra Courses Taken:** Quantum Computing by IBM | Deep Learning Specialisation | Machine learning | Discrete Mathematics | Data Structures

## AWARDS / SCHOLARSHIPS / ACADEMIC ACHIEVEMENTS

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**IIT Roorkee Heritage Excellence Award:** Awarded to 46 undergrads out of 4500 at IIT Roorkee, by the alumni network for outstanding academic, co-curricular and extra-curricular achievements.

**Encore Award 2020:** Awarded to 10 Juniors out of 1000 at IIT Roorkee, by the batch of '89, for all-round excellence.

**Panelist speaker at the Linux Conference Open Source Summit, Europe 2020.**

**Encore Award 2019:** Awarded to 8 sophomores out of 1000 at IIT Roorkee, by the batch of '89, for all-round excellence.

**National Talent Search Examination (NTSE) 2016 scholar:** An yearly stipend, provided by Government of India for excellence in Science, till completion of studies.

**KVPY SX scholar:** Fellowship Provided by IISc, Bangalore for students showing excellence in science and mathematics.

**National Standard Examination in Junior Science (NSEJS) 2016, organized by IAPT, IISc Bangalore:** Qualified and stood amongst state-wise top 1%.

**UG Teaching Assistant:** Teaching assistant for Mechanics and Probability & Statistics courses for two consecutive semesters.

## PORS AND EXTRA CURRICULARS

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**ACM chapter, IIT Roorkee:** Responsible for managing and moderating Deep Learning workshops and Open lectures

**Mobile Development Group, IIT Roorkee:** **Head of Operations** and Student Mentor