

# Joel Sleeba

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## About Me

I am a 2<sup>nd</sup> year masters student in mathematics at the Indian Institute of Science Education and Research, Thiruvananthapuram and I am doing my master's project on **Fourier analysis** under the guidance of Dr. P Devaraj. I am broadly interested in **Harmonic Analysis and Operator Theory**. I am also passionate about open source software and a proud Linux user.

## Education

2021–present **M.Sc Mathematics**, *IISER Thiruvananthapuram*, CGPA: 8.06

- **Relevant courses:** Functional Analysis, Measure Theory, Topology, Abstract Algebra, Finite Frames, Representation Theory
- **Readings**
  - *Functional Analysis: A First Course*, S. Kumaresan and D. Sukumar
  - *Measures, Integrals and Martingales*, René L. Schilling
  - *Topology*, James Munkres
  - *Abstract Algebra*, David S. Dummit, Richard M. Foote
  - *Finite Frames*, Peter G. Casazza, Gitta Kutyniok
  - *Complex Analysis*, Elias M. Stein, Rami Shakarchi

2018–2021 **B.Sc Mathematics**, *Madras Christian College*, Chennai, GPA: 8.03

- **Relevant courses:** Real Analysis, Algebra, Linear Algebra, Number Theory, Discrete Mathematics
- **Readings**
  - *Understanding Analysis*, Stephen Abbott
  - *Topics in Algebra*, I. N. Herstein
  - *Linear Algebra Done Right*, Sheldon Axler
  - *Elementary Number Theory*, David M. Burton

## Master's Thesis

Title *To be determined*

Supervisor Dr. P Devaraj

Description

- **Current reading:** Holomorphic Fourier Transforms from *Real and Complex Analysis* by Walter Rudin
- **Previous reading:** Fourier Series on a circle from *Early Fourier Analysis* by Hugh L. Montgomery

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## Summer Schools

- 2021 April – **Mathematics Training and Talent Search, Online**  
2021 May Participated in level 1 of the national annual summer camp hosted by MTTS trust.  
**Topics**
  - *Foundations*, S. Kumaresan
  - *Algebra*, Krishna Hanumanthu
  - *Analysis*, G. Santhanam
  - *Topology*, Pratulnanda Das
- 2020 May – **Mathematics Training and Talent Search, Online**  
2020 June Participated in level 0 of the national annual summer camp hosted by MTTS trust.  
**Topics**
  - *Foundations*, S. Kumaresan
  - *Algebra*, H. Ananthnarayan
  - *Analysis*, A. J. Jayanthan

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## Achievements

- 2021 **Rank 1**, *M.Sc mathematics entrance examination*, Pondicherry University
- 2021 **Rank 3**, *M.Sc mathematics entrance examination*, Hyderabad Central University

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## Skills

- Scripting **Python, Bash**  
*Python Libraries*: Matplotlib, Scikit, Numpy  
*Bash*: Task automation in Linux
- Programming **C, C++, Java**  
*C*: Algorithms involving pointers and structures  
*C++*, *Java*: Object Oriented Programming paradigm
- CAS **MATLAB, GNU Octave, Maxima, SageMath**  
*MATLAB, Maxima*: Basics as part of Coursework.  
*GNU Octave, SageMath*: Introductory knowledge
- Markup **LaTeX, Markdown, HTML**
- Languages **English, Malayalam, Tamil, Hindi**  
Native proficiency in English and Malayalam. Elementary proficiency in Tamil and Hindi.

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## Additional Courses

- 2020 July – **CS101.2x: Object-Oriented Programming, IITBombayX**, MOOC, A+  
2020 Dec *Instructors*: Prof. Deepak B Phatak, Prof. Supratik Chakraborty  
*Topics*: Object Oriented Paradigm, Algorithms in OOP
- 2020 July – **CS101.1x: Programming Basics, IITBombayX**, MOOC, A+  
2020 Dec *Instructors*: Prof. Deepak B Phatak, Prof. Supratik Chakraborty  
*Topics*: Syntax and basic algorithms in C++

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## Teaching

- 2021 Sep – **Mentor, Online Foundation Course in Mathematics**, MTTS Trust  
2021 Oct Cleared doubts and guided discussions for first and second year undergraduates.

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## Projects

- 2022 Sep – **Math Modelling**, *The International Genetically Engineered Machine competition (iGEM)*, IISER Thiruvananthapuram  
2022 Nov Modelled vesicle internalization for a breast cancer drug delivery system.
- 2022 Sep – **Web Developement**, *The International Genetically Engineered Machine competition (iGEM)*, IISER Thiruvananthapuram  
2022 Nov Developed the team webpage. The website can be accessed [here](#).
- 2021 **XOR encryptor**  
January Developed a python script that can encrpyt any file or text using a key or password. The repository can be accessed from [here](#).
- 2020 May **CSSart**  
Developed a series of websites using CSS and HTML. The website can be accessed [here](#).