

# JOEL SLEEBA

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## Education

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### Indian Institute of Science Eductaion and Research

*Master of Science in Mathematics, GPA: 8.38*

**Oct. 2021 – May 2023**

*Thiruvananthapuram, Kerala*

### Madras Christian College

*Bachelor of Science in Mathematics, GPA: 8.03*

**June 2018 – May 2021**

*Chennai, Tamil Nadu*

## Relevant Coursework

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|-----------------------|-------------------------|-----------------|-------------------------|
| • Functional Analysis | • Representation Theory | • Topology      | • Analysis of Manifolds |
| • Measure Theory      | • Finite Frames         | • Real Analysis | • Machine Learning      |

## Experience

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### Unitary Invariants for Representations of Operator Algebras

*Reading Project*

**Sept. 2023 – Present**

*Dr. Soumyashant Nayak, ISI Bangalore*

- Plans to read the paper by Richard Kadison of the same name

### Introduction to $C^*$ Algebras

*Summer Reading Project*

**June 2023 – Sept. 2023**

*Dr. P Shankar, Cochin University of Science and Technology*

- Understood the basics of Banach and  $C^*$  algebra theory including spectral theorem, Gelfand transforms, compact and Fredholm operators, functional calculus, sesquilinear forms, positive linear functionals, and GNS representations.
- Covered chapters 1-3 from  *$C^*$  Algebras and Operator Theory* by Gerald Murphy and parts of chapter 1 from *An Invitation to  $C^*$  Algebras* by Willian Arveson.

### Fourier Analysis: From Circle, through the line, to the complex

*Masters Thesis, Grade:A+ (Maximum possible Grade)*

**Jan. 2023 – April 2023**

*Dr. P Devaraj, IISER Thiruvananthapuram*

- Explored Fourier transforms in the circle and line,  $\ell^p$  convergence of Fourier series, Fourier Inversion, and classical Paley Wiener theorems
- Covered chapters 3, parts of chapter 4 and 10 from *Early Fourier Analysis* by Hugh L Montgomery and parts of chapter 19 from *Real and Complex Analysis* by Walter Rudin.

## Computability

*Student Reading Project*

**Jan. 2022 – March 2022**

*Ashish Kujur, IISER Thiruvananthapuram*

- Assisted in development of the front end of a mobile application for iOS/Android using Dart and the Flutter framework.
- Worked with Google Firebase to manage user inputted data across multiple platforms including web and mobile apps.
- Collaborated with team members using version control systems such as Git to organize modifications and assign tasks.
- Utilized Android Studio as a development environment in order to visualize the application in both iOS and Android.

## Summer Schools

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### Mathematics Training and Talent Search | Level 1 Camp

**April 2021 – May 2021**

- Participated in the online summer camp hosted by MTTS trust, funded by the National Board of Higher Mathematics.
- Helped revise concepts in group theory, real analysis and linear algebra.
- Aided active discussion of mathematics.

### Mathematics Training and Talent Search | Level 0 Camp

**May 2020 – June 2020**

- Gained a deeper understanding of topics including Logic, Sequence and Series, Vector Spaces.

## Leadership / Extracurricular

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### Operator Algebra Reading Group

Sept. 2023 – Present

- Achieved a 4 star fraternity ranking by the Office of Fraternity and Sorority Affairs (highest possible ranking).
- Managed executive board of 5 members and ran weekly meetings to oversee progress in essential parts of the chapter.
- Led chapter of 30+ members to work towards goals that improve and promote community service, academics, and unity.

### Pi Quiz 3.0

March 14, 2022

Host

*Club of Mathematics, IISER Thiruvananthapuram*

- Achieved a 4 star fraternity ranking by the Office of Fraternity and Sorority Affairs (highest possible ranking).
- Managed executive board of 5 members and ran weekly meetings to oversee progress in essential parts of the chapter.
- Led chapter of 30+ members to work towards goals that improve and promote community service, academics, and unity.

### Online Foundation Course in Mathematics

Sept. 2021 – Oct. 2021

Mentor

*MTTS Trust*

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## Achievements

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### M.Sc Entrance Examination

2021

*Rank 1, Mathematics*

*Pondicherry University*

### M.Sc Entrance Examination

2021

*Rank 3, Mathematics*

*Hyderabad Central University*

## Additional Courses

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### CS101.2x: Object-Oriented Programming

July 2020 – Dec. 2020

*Grade: A+ (Maximum Possible Grade)*

*MOOCs Course, IITBombayX*

### CS101.1x: Programming Basics

July 2020 – Dec. 2020

*Grade: A+ (Maximum Possible Grade)*

*MOOCs Course, IITBombayX*

## Other Projects

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### Math Modelling

Sept. 2022 – Nov. 2022

Volunteer

*The International Genetically Engineered Machine competition (iGEM), IISER Thiruvananthapuram*

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- Managed executive board of 5 members and ran weekly meetings to oversee progress in essential parts of the chapter.
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### Web Development

Sept. 2022 – Nov. 2022

Volunteer

*The International Genetically Engineered Machine competition (iGEM), IISER Thiruvananthapuram*

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### XOR Encryptor

Jan. 2021

Developer

- Achieved a 4 star fraternity ranking by the Office of Fraternity and Sorority Affairs (highest possible ranking).
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- Led chapter of 30+ members to work towards goals that improve and promote community service, academics, and unity.

### CSSart

May. 2020

Developer

- Achieved a 4 star fraternity ranking by the Office of Fraternity and Sorority Affairs (highest possible ranking).
- Managed executive board of 5 members and ran weekly meetings to oversee progress in essential parts of the chapter.

## Search for Extra Terrestrial Intelligence

Sept. 2015 –

*Volunteer*

*SETI Institute*

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- Managed executive board of 5 members and ran weekly meetings to oversee progress in essential parts of the chapter.
- Led chapter of 30+ members to work towards goals that improve and promote community service, academics, and unity.

## Technical Skills

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**Programming:** Python, C, C++, Java, Bash, SQL

**Markup:** L<sup>A</sup>T<sub>E</sub>X, Markdown, HTML, CSS

**CAS:** MATLAB, GNU Octave, Maxima, SageMath