

# Shikhar Jaiswal

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## EDUCATION

### IIT PATNA

**B.TECH. IN COMPUTER SCIENCE AND ENGINEERING**  
 2016 - Present | Patna, India  
 CPI: 8.47 / 10.0

### TAGORE INTERNATIONAL, EOK

**INTERMEDIATE/+2**  
 May 2016 | New Delhi, India  
 CBSE : 93.60 / 100  
**MATRICULATION**  
 May 2014 | New Delhi, India  
 CGPA: 10.0 / 10.0

## ACCEPTED TALKS

### PYCON INDIA 2017

- CAS For Different Programming Languages Using SymEngine And SymPy

### SCIPY INDIA 2017

- SymEngine: Leveraging The Power Of A CAS To Another

## COURSEWORK

### COMPUTER SCIENCE

Programming and Data Structures + Lab  
 Algorithms + Lab  
 Switching Theory + Lab\*  
 Innovative Design Lab\*

### MATHEMATICS

Linear Algebra and ODE  
 Real and Complex Analysis and PDE  
 Discrete Mathematics  
 Optimization Techniques\*  
 Probability Theory and Random Processes\*

(\*) courses to be completed by April 2018

## TECHNICAL SKILLS

### PROGRAMMING

Proficiency:  
 C • C++ • Python • Cython  
 Familiarity:  
 JavaScript • SQL

### LIBRARIES AND TOOLS

CMake • MATLAB • SymPy  
 GNU Octave • OpenCV  
 • NumPy • Git • Django

## EXPERIENCE

### GOOGLE SUMMER OF CODE 2017 | SYMPY

May 2017 – Present | Mentors: Isuru Fernando and Sumith Kulal

- Improved overall infrastructure of *SymEngine*, a fast standalone C++ Computer Algebra System (CAS), and refactored its Python wrapper *SymEngine.py*.
- Introduced SymEngine as an optional core for *SymPy*, a popular symbolic manipulation engine in Python, and *PyDy*, a multi-body dynamics tool-kit.
- Implemented the support for Relational operators and NaN data type in SymEngine, Singleton Pattern in SymEngine.py, along with improvements to the Continuous Integration (CI), and increasing the code coverage of both the libraries.

## PROJECTS

### GESTURES ALIVE | GESTURE RECOGNITION PACKAGE

Autumn 2017

- Used Python libraries OpenCV and NumPy to build a gesture recognition app.
- Used web-cam to detect hand, and track its lateral movements to record gestures.

### ORGAN EXCHANGE | PATIENT-DONOR EXCHANGE RESOLVER

Autumn 2017

- Developed a full stack web application using Django to allocate donor organs to patients keeping donor preference and blood group viability factors.
- Implemented a modified version of Gale-Shapley algorithm to reduce the exchange to a stable matching problem.

### LET'S FOOTBALL | DESIGN-PATTERN BASED GAME ENGINE

Summer 2017

- Programmed a Football Game Engine in C++ to simulate object interactions of a football game.
- Identified and solved design problems associated with Football, Players and Team Strategy using Observer, Decorator and Strategy patterns respectively.
- Implemented RCP support for resource management and garbage collection.

### ENIGMA STEGANOGRAPHER | STEGANOGRAPHY TOOL

Spring 2017

- Implemented the well known 1930 Enigma I Cipher (used by the Axis Powers in World War II) in C++.
- Enhanced capabilities by adding additional military plug-board support and increasing the number of encrypting mechanical rotors.
- Provides a total number of 11.2 sextillion different possible combinations.

## HONOURS AND ACHIEVEMENTS

2016 Secured 98.71 percentile in JEE Advanced among 0.2 million candidates  
 2016 Secured 99.54 percentile in JEE Main among 1.2 million candidates  
 2016 Secured 99.13 percentile in National Entrance Screening Test (NEST) among 40,000 candidates  
 2016 Recipient of Kishore Vaigyanik Protsahan Yojana (KVPY) Scholarship  
 2013 Recipient of CBSE Award for Community Service - Human Rights and Social Equality