

# 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

## COLLABORATIONS

### NJACK WINTER OF CODE 2017

Responsible for review and selection  
of projects and grade moderations

### SYMENGINE

Member of the Push-Access Team

## 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

## TECHNICAL SKILLS

### PROGRAMMING

Proficiency:

C • C++ • Python • Cython

Familiarity:

JavaScript • SQL

### LIBRARIES AND TOOLS

- NumPy • Tensorflow • Orange
- SymPy • OpenCV
- CMake • Git • Django

## EXPERIENCE

### GOOGLE SUMMER OF CODE 2017 | SYMPY

May 2017 – August 2017 | 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.
- Gestures are processed to perform tasks such as toggling applications and controlling volume among other features.

### 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 (KVPPY) Scholarship  
2013 Recipient of CBSE Award for Community Service - Human Rights and Social Equality