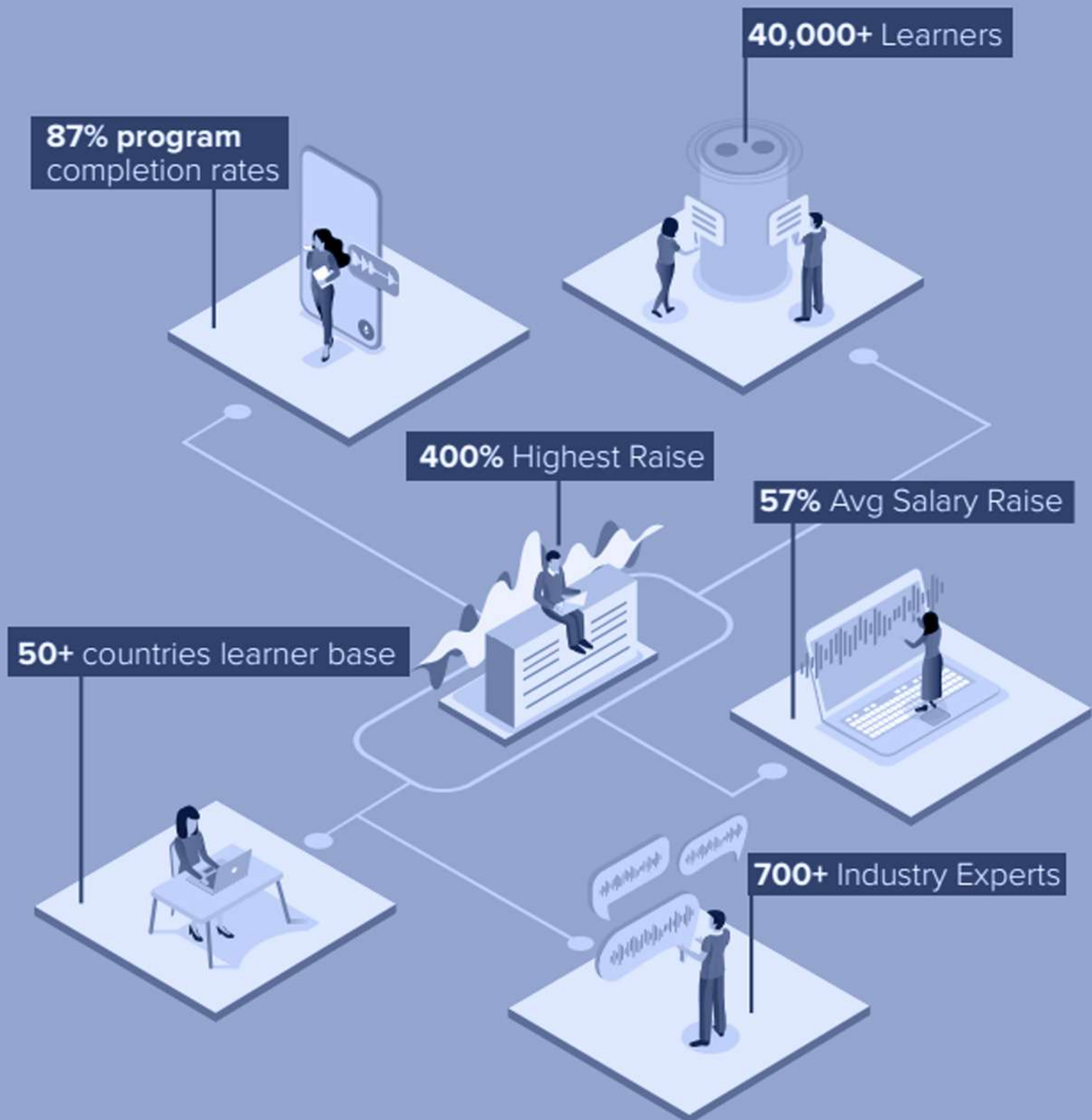




ADVANCED CERTIFICATE
PROGRAMME IN
**MACHINE LEARNING &
NATURAL LANGUAGE
PROCESSING**

Why Chools & JG



Learning Experience

Industry-relevant Curriculum

Designed and taught by best in class industry experts and Chools & JG University faculty.

Discussion Forums

Learn from your peers and teaching assistants, and for timely doubt resolution.

Re-learn the Concepts

Get program access for upto 3 years to refresh your concepts.

Blended Learning

Learn with the ease and flexibility of recorded sessions as well as live sessions, designed to ensure a wholesome learning experience.

Career Assistance

Access to upGrad's job opportunities portal, career mentorship, profile review and more.

Hands-On Projects

Multiple case studies & assignments & a mini capstone project to choose from and apply learnings to it.

Chools & JG Learning Experience

Coaching

- Student Support Team & Chools - JG
- Weekly real-time doubt clearing sessions
- Reverse knowledge transfer sessions (FLIP classrooms) with learners assuming the role of an expert and tutoring fellow batchmates
- 100+ commonly asked interview questions added across modules
- Live Discussion forum for peer to peer doubt resolution monitored by technical experts
- Peer to peer networking opportunities with an alumni pool of 10000+ professionals
- Lab walk-throughs of industry-driven assignments/case studies/projects
- Employability Tests for industry readiness
- Access to the program for upto 3 years

Format

- Online format with live sessions weekly: Weekly live learning sessions from industry experts to help with topic walkthroughs, doubt resolution and personalised project feedback.
- Offline sessions such as Chools & JG basecamps and hackathons

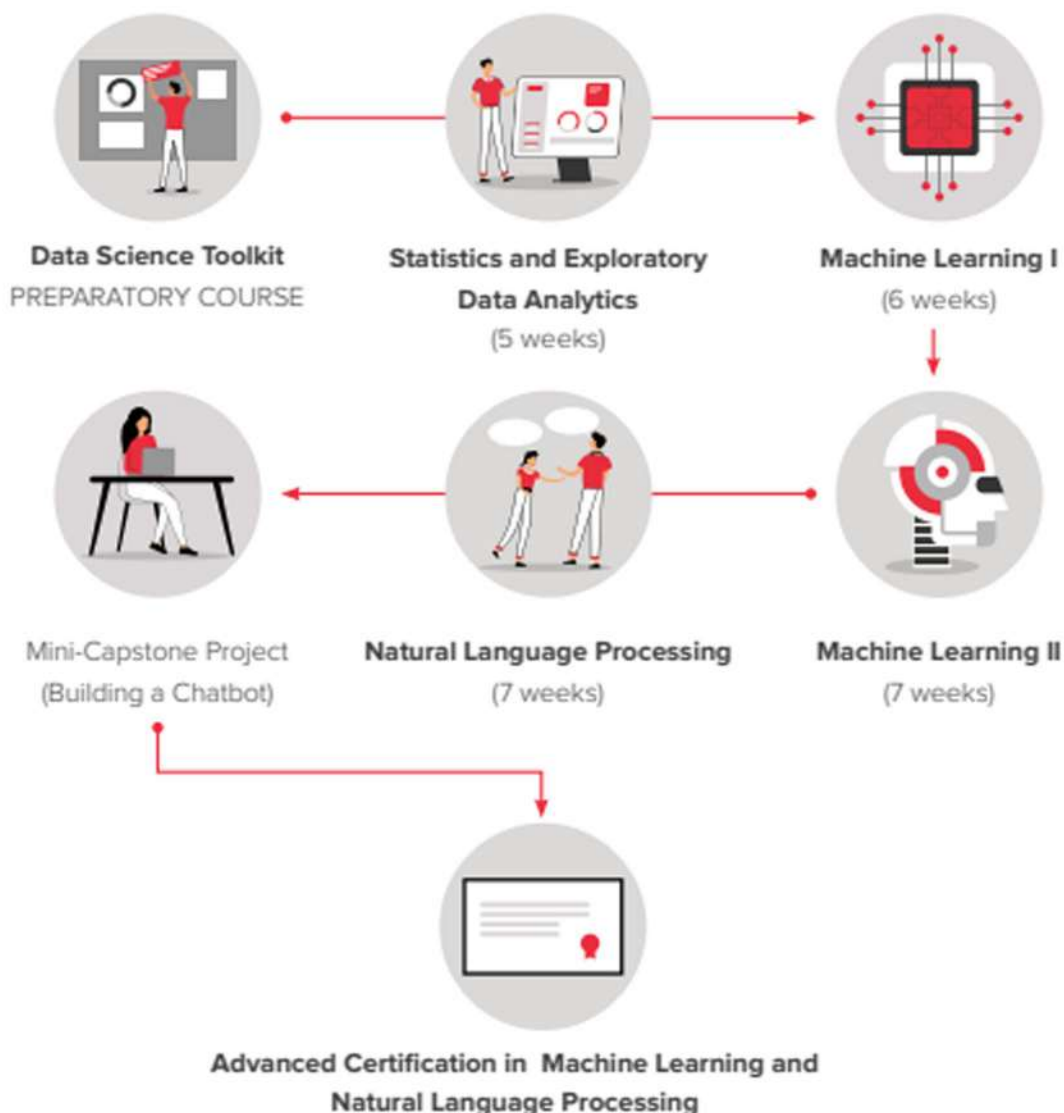
Mentorship

Live interactive sessions with leading industry experts covering curriculum + advanced topics.

- Fortnightly personalised group (1:8) mentorship sessions with industry experts for pro-active mentoring.



Learning Path



Programming Tools, Languages & Libraries

Pandas, Matplotlib, Numpy, Seaborn, Scikit-learn, Statsmodels,
NLTK, Python, Rasa, MySQL, Excel



Industry Projects



Investment Analysis

Learners will fill in the shoes of an analyst at an investment bank and determine where the firm should invest. They will then have to explain their recommendations in lieu of the analysis conducted.



Lending Club Case

Determine which customers are at the risk of default and what are their characteristics so as to avoid providing loans to similar people in the future.



Car Price Prediction

Build a model to understand the factors car prices vary on and help a Chinese company enter the US car market.



House Price Prediction

Build a model to understand the factors house prices vary on and help an American company enter the Australian housing market.

Industry Projects



Part-of-Speech tagger project

Build a POS tagger for tagging unknown words using HMM's and modified Viterbi algorithm.



Telecom Churn Case

Solve the most crucial business problem for a leading telecom operator in India and southeast Asia - predicting customer churn.



MINI CAPSTONE PROJECT:

Building Chatbots

Imagine if you could make restaurant booking without opening Zomato. Build your own restaurant-search chatbot with the help of RASA - an open source framework and deploy it on Slack.



Program Curriculum



DATA SCIENCE TOOLKIT

1

INTRODUCTION TO PYTHON

Build a foundation for the most in-demand programming language of the 21st century.

2

PYTHON FOR DATA SCIENCE

Learn how to manipulate datasets in Python using Pandas, which is the most powerful library for data preparation and analysis.

3

DATA VISUALISATION IN PYTHON

Humans are visual learners and hence no task related to data is complete without visualisation. Learn to plot and interpret various graphs in Python and observe how they make data analysis and drawing insights easier.

4

DATA ANALYSIS USING SQL (OPTIONAL)

Data in companies is definitely not stored in excel sheets! Learn the fundamentals of database and extract information from RDBMS using the structured query language.

5

ADVANCED SQL AND BEST PRACTICES (OPTIONAL)

Apply advanced SQL concepts like windowing and procedures to derive insights from data and answer pertinent business questions.

6

DATA ANALYSIS IN EXCEL (OPTIONAL)

Taught by one of the most renowned data scientists in the country (S.Anand, CEO, Gramener), this module takes you from a beginner level Excel user to an almost professional user.

7

ANALYTICS PROBLEM SOLVING (OPTIONAL)

This module covers concepts of the CRISP-DM framework for business problem-solving.

Program Curriculum



STATISTICS AND EXPLORATORY DATA ANALYTICS

- 1 EXPLORATORY DATA ANALYSIS**
Learn how to find and analyse the patterns in the data to draw actionable insights.
- 2 INVESTMENT ASSIGNMENT**
Learners will fill in the shoes of an analyst at an investment bank and determine where the firm should invest. They will then have to explain their recommendations in lieu of the analysis conducted.
- 3 INFERENCE STATISTICS**
Build a strong statistical foundation and learn how to 'infer' insights from a huge population using a small sample.
- 4 HYPOTHESIS TESTING**
Understand how to formulate and validate hypothesis for a population to solve real-life business problems.
- 5 LENDING CLUB CASE STUDY**
Determine which customers are at the risk of default and what are their characteristics so as to avoid providing loans to similar people in the future.

Program Curriculum



MACHINE LEARNING I

1

LINEAR REGRESSION

Venture into the machine learning community by learning how one variable can be predicted using several other variables through a housing dataset where you will predict the prices of houses based on various factors.

2

ASSIGNMENT: LINEAR REGRESSION

Build a model to understand the factors car prices vary on and help a Chinese company enter the US car market.

3

LOGISTIC REGRESSION

Learn your first binary classification technique by determining which customers of a telecom operator are likely to churn to help versus who are not to help business retain customers.

4

NAIVE BAYES

Understand the basic building blocks of Naive Bayes and learn how to build an SMS Spam Ham Classifier using Naive Bayes technique.

5

MODEL SELECTION

Learn the pros and cons of simple and complex models and the different methods for quantifying model complexity, along with regularisation and cross validation.

Program Curriculum



MACHINE LEARNING II

- 1 ADVANCED REGRESSION**
Understand generalised regression and different feature selection techniques, along with the perils of overfitting and how it can be countered using regularisation.
- 2 ADVANCED REGRESSION ASSIGNMENT**
Build a model to understand the factors house prices vary on and help an American company enter the Australian housing market.
- 3 SUPPORT VECTOR MACHINE (OPTIONAL)**
Learn how to find a maximal marginal classifier using SVM, and use them to detect spam emails, recognise alphabets and more!
- 4 TREE MODELS**
Learn how the human decision making process can be replicated using a decision tree and other powerful ensemble algorithms.
- 5 MODEL SELECTION: PRACTICAL CONSIDERATIONS**
Given a business problem, how do you choose the best algorithm? Learn a few practical tips for doing this here.
- 6 BOOSTING**
Learn how weak learners can be 'boosted' with the help of each other and become strong learners using different boosting algorithms such as Adaboost, GBM, and XGBoost.
- 7 UNSUPERVISED LEARNING: CLUSTERING**
Learn how to group elements into different clusters when you don't have any pre-defined labels to segregate them through K-means clustering, hierarchical clustering, and more.
- 8 UNSUPERVISED LEARNING: PRINCIPAL COMPONENT ANALYSIS**
Understand important concepts related to dimensionality reduction, the basic idea and the learning algorithm of PCA, and its practical applications on supervised and unsupervised problems.
- 9 TELECOM CHURN CASE STUDY**
Solve the most crucial business problem for a leading telecom operator in India and southeast Asia - predicting customer churn.

Program Curriculum



NATURAL LANGUAGE PROCESSING

1

LEXICAL PROCESSING

Do you get annoyed by the constant spams in your mail box? Wouldn't it be nice if we had a program to check your spellings? In this module, learn how to build a spell checker and spam detector using techniques like phonetic hashing, bag-of-words, TF-IDF, etc.

2

SYNTACTICAL PROCESSING

Learn how to analyse the syntax or the grammatical structure of sentences with the help of algorithms and techniques like HMMs, Viterbi Algorithm, Named Entity Recognition (NER), etc.

3

SYNTACTIC PROCESSING - ASSIGNMENT

Build a POS tagger for tagging unknown words using HMM's & modified Viterbi algorithm.

4

SEMANTIC PROCESSING

Learn the most interesting area in the field of NLP and understand different techniques like word embeddings, LSA, topic modelling, to build an application that extracts opinions about socially relevant issues (such as demonetisation) on social media platforms.

MINI CAPSTONE

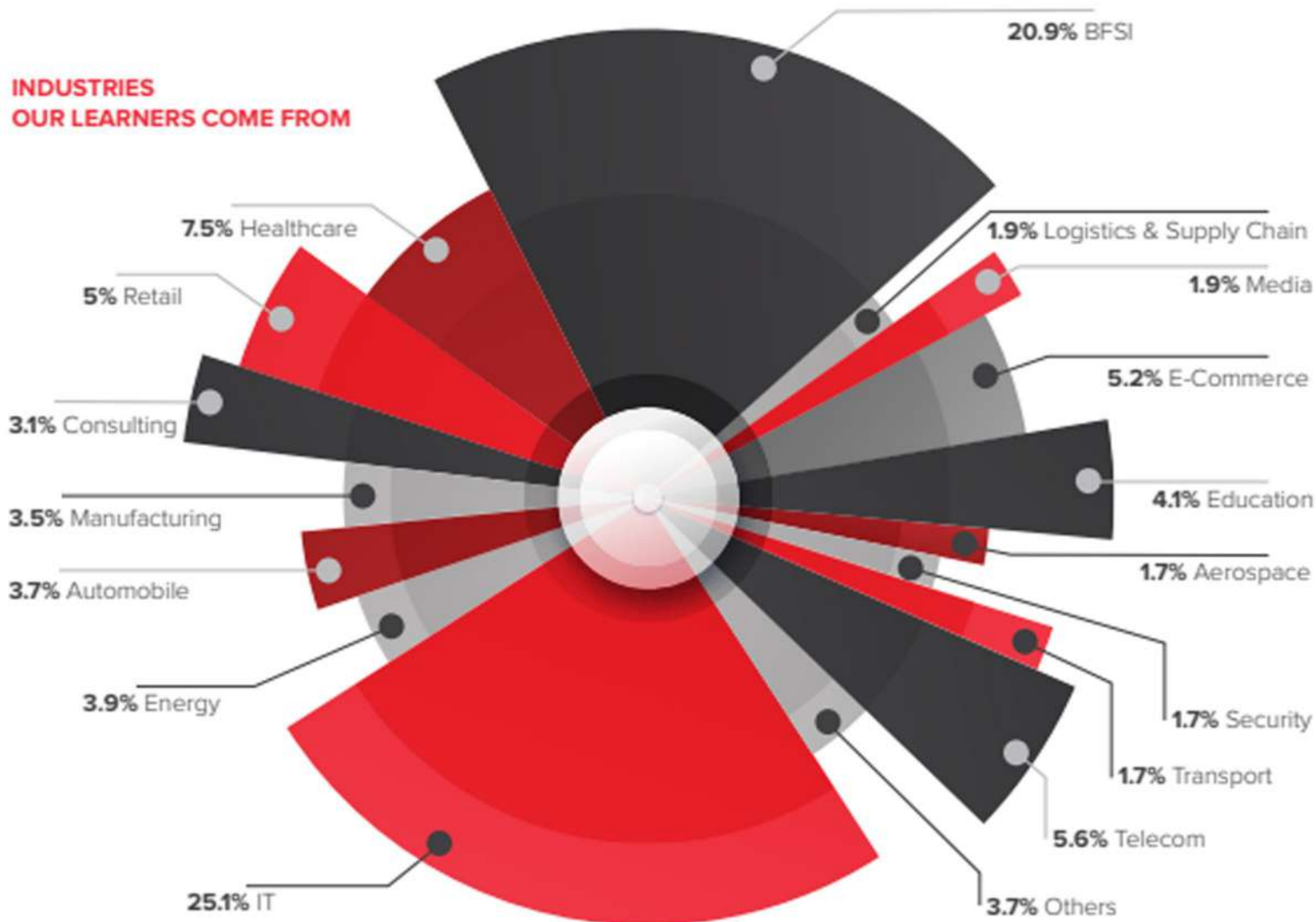
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BUILDING CHATBOTS WITH RASA

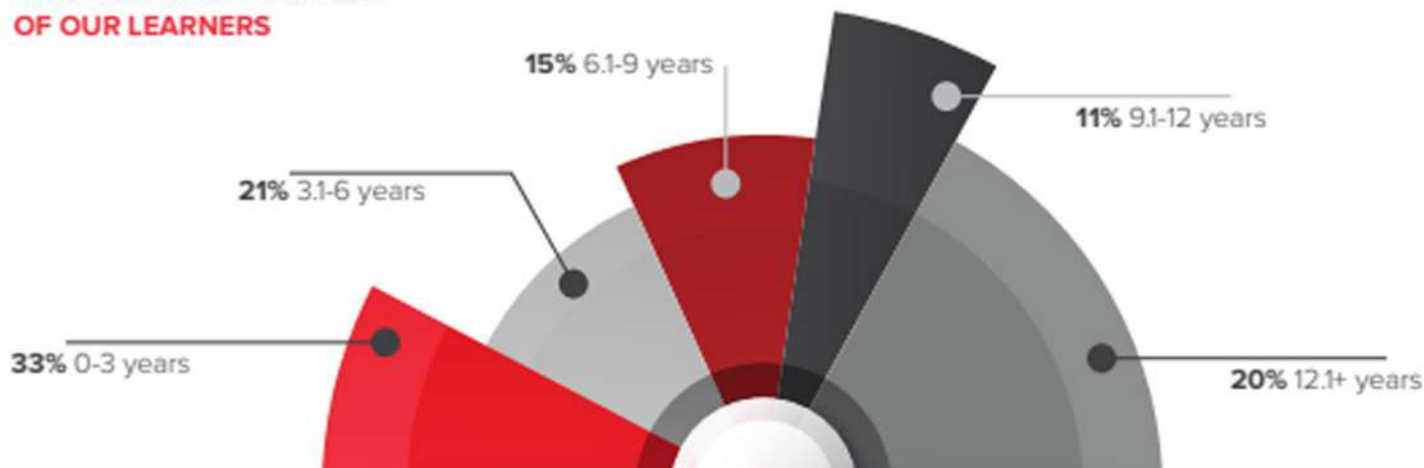
Imagine if you could make restaurant booking without opening Zomato. Build your own restaurant search chatbot with the help of RASA, an open source framework, and deploy it on Slack.

Meet the Class

INDUSTRIES OUR LEARNERS COME FROM



WORK EXPERIENCE RANGE OF OUR LEARNERS



Program Details and Admission Process

PROGRAM DURATION AND FORMAT

6 Months | Online

PROGRAM FEE

\$ 1699

(program fee mentioned in USD)

PROGRAM START DATES

Please refer to the website for the program start dates.

ELIGIBILITY

Bachelor's degree with 50% or equivalent passing marks.

TIME COMMITMENT (12 hours/week)



6 HOURS

Asynchronous learning time.



6 HOURS

Assignments and projects.



LIVE SESSION

Every weekend.

SELECTION PROCESS



STEP 1: Fill out the Application Form

Fill out an application with details on your professional & educational background.



STEP 2: Review and Shortlisting of Suitable Candidates

Our Admissions Committee will review all applications - and will consider the the educational and professional background of an applicant. Following this, offer letters will be rolled out so you're assured a great peer group to learn and network with.



STEP 3: Enrollment for Access to Prep Content

Make a quick block payment with assistance from our Loan partners where required, receive immediate access to the prep content and begin your