



Proposal for NTUCollab: Collaboratory platform for NTU students

Dandapath Soham – Project Manager, Back-end Developer

Gupta Jay – Lead Developer, Release Engineer

Kanodia Ritwik – Front-end Developer, Release Engineer

Mundhra Divyesh – Front-end Developer

Bhatia Ritik – Back-end Developer

Somani Palak – QA Manager, QA Engineer

Bansal Aditya – QA Manager, QA Engineer

Team Eagles

School of Computer Science & Engineering

Nanyang Technological University, Singapore

Submitted to—

Dr Shen Zhiqi

School of Computer Science & Engineering

Nanyang Technological University, Singapore

Contents

EXECUTIVE SUMMARY	3
STATEMENT OF PROBLEM	3
OBJECTIVES	4
TECHNICAL APPROACH	6
Customer Needs	6
Target Specifications	6
Technology Consideration	7
System Architecture/Platform	7
PROJECT MANAGEMENT	9
Deliverables	9
Budget	10
Communication and Coordination with Sponsor	10
Team Qualifications	11
REFERENCES	12
APPENDIX A: RÉSUMÉS OF TEAM MEMBERS	13
1. Dandapath Soham – Project Manager, Back-End Developer	13
2. Gupta Jay – Lead Developer, Release Engineer	14
3. Kanodia Ritwik – Front-End Developer, Release Engineer	15
4. Mundhra Divyesh – Front-End Developer	16
5. Bhatia Ritik – Back-End Developer	17
6. Somani Palak – QA Manager, QA Engineer	18
7. Bansal Aditya – QA Manager, QA Engineer	19

Executive Summary

NTUCollab will be an application developed to meet the needs and facilitate more interaction between the NTU Community. The cross-platform mobile application will allow students to find groups among their peers based on similar interests and hobbies. The user will be asked to select some tags which define their personality traits and interests. Accordingly, the application will show them a list of groups, and clubs which they can be a part of.

Currently there is no application which facilitates group interactivity among the NTU Community based on individual interests. Engagement in this form which enables one to be socially interactive plays a very important role in the life of young adults who are looking to be independent from their parents and transitioning towards establishing a life of their own. Our application wants to create relations among peers inside as well as outside the scope of one's academics, focusing on individual hobbies and interests to keep the fuel burning among the highly competitive university life. These are the problems which NTUCollab seeks to address.

To ensure the user friendliness and at the same time keeping in mind the software maintainability and scalability, the application will be developed using Flutter framework which would allow the application to run on android as well as iOS platforms.

Team Eagles will focus on building an easily accessible, scalable, maintainable, and highly user-friendly application which will be used by the entire NTU community including student, professors, and staff members.

Statement of Problem

Social Interactions plays an important role in an individual's life, especially a university student. Surveys show that level of stress among college students across the world is at an average of 62% but among the students in Singapore it is at a very high mark of around 85-90 % ^[1]. One of the major reasons of this high level of perceived stress is the increased focus on academic knowledge and grades, which leaves no time for individuals to pursue their hobbies and interact with people outside their academic bubble. Unfortunately, there are not many applications which addresses this issue among students.

Applications provided by our university like NTULearn ^[2] and U-Wave ^[3], which are the most extensively used applications among students, only serve individual needs and do not facilitate an easy form of interaction and group creation among their peers. These apps are academically focused and hence just facilitate discussions regarding courses and schoolwork.

Our application allows users to join group under 3 categories mainly "Modules", "Clubs" and "Interests". Groups under "Modules" would facilitate easy interaction among the batchmates as well as people who are interested in taking a particular module. Students often want to find more about individual experiences of other students who have taken a particular course in the past, hence the "Module" groups will serve as a common platform for students to get more information on a course they are interested in and at the same time

providing an easily accessible platform for the students who have taken a module to discuss. Groups under “Clubs” and “Interests” will be more interactive where students can discuss and pursue their passions while collaborating with their peers. Groups under “Module” and “Clubs” would display information regarding their respective purpose as well as have a user group to discuss matters, while groups under “Interests” will focus more on serving as a forum for discussion among the members. We all know that universities are much more than academics and here an individual grows in all directions and not just gains academic knowledge. There needs to be an application which facilitates engagement inside and outside the academic world and our application provides a perfect platform for this issue.

Team Eagles is comprised of seven students who have ample amount of experience in software development and are high skilled in building easily maintainable and user-friendly applications in an agile manner. The problems which our application seems to address has been faced by all our members and hence being the firsthand application users is an added advantage for our team.

Objectives

This document proposes a mobile app NTUCollab, with the objectives of:

- 1) **Allowing a user to select their tags based on their interests** – The user will use their NTU email and a password to create an account in our application. This will ensure that the user belongs to the NTU community and is not an outsider. The password will not be stored in our database and authentication will take place via SSO (Single-Sign On) method. During the creation of the account, the user will be asked to select some of the tags which are related to their personality and interests. The tags will belong to a wide range of domains such as Co-curricular clubs, Sports, Hobbies, Modules, Competitions etc. These selections will then be used to show the recommended interest groups, modules, and clubs which the user should join. At any point of the application usage, the user will be given a choice to edit the interest tags and that will ensure that the recommendations are catered at a dynamic level.
- 2) **Allowing a user to join a group** – On the home screen, the application would be displaying the top recommended groups for the user and the groups of which the user is already a part of. Among the list of recommended groups, the user can then select a group to be a part of and then send a request to the admin of the group to accept the invitation for joining the group. The groups will be divided into mainly 3 sections which are “Modules”, “Clubs” and “Interests”. The groups under the “Modules” section will allow the users taking or interested in a particular module, interact among themselves. The module information will be fetched from the NTU STARS system which will be integrated with our application. Similarly, for the Clubs and Interest groups, members would be allowed to interact freely among the group members.

- 3) **Allowing a user to create a group** – A user might want to create a new group based on a newly found interest and our application caters to this need by allowing any user to create a group. While creating, the user will have to add group name, description, and some of the interest tags which that group represents. The creator of the group will be the default admin of the group and will have the permission to assign any of the other users of the group to be an admin as well. At the initial stages of a group formation, the admins will also have the privilege to send invites to the registered user on our platform, so that they can let people know of this group.
- 4) **Allowing users to chat and post in a group** – The main purpose of our app is to facilitate interactions among individuals, and this would be achieved by the users being able to post in one of the groups which they are a part of. A user might be interested to share a fact or an upcoming event which might interest the other group members and hence this feature will be useful to start a discussion in this case. The group will also have a feature for all the group members to chat wherein they can discuss on a particular matter pertaining to the entire group.
- 5) **Allowing a user to rate groups** – Members of any group can rate the group based on certain specific parameters. The groups under the “Module” category will be rated based on “Difficulty Level”, “Time Commitment” and “Demand”. Groups under the category “Clubs” will be rated on “Entry Difficulty”, “Time Commitment” and “Learning” while the “Interest” groups will just have a “General” rating. A new user can get a quick look and summary of a particular group by having a look at these ratings and then they can decide if they want to be a part of a group.

Technical Approach

We chose to develop a mobile application for the project as it allows the user to access offline features without an internet connection. It also makes it easier to use the application on the go.

Customer Needs

We realize that opinion differs from person to person. A problem which may seem significant to us as developers may not seem so significant to the customers.

Therefore, to re-affirm the customer needs, we conducted a short survey of NTU students.

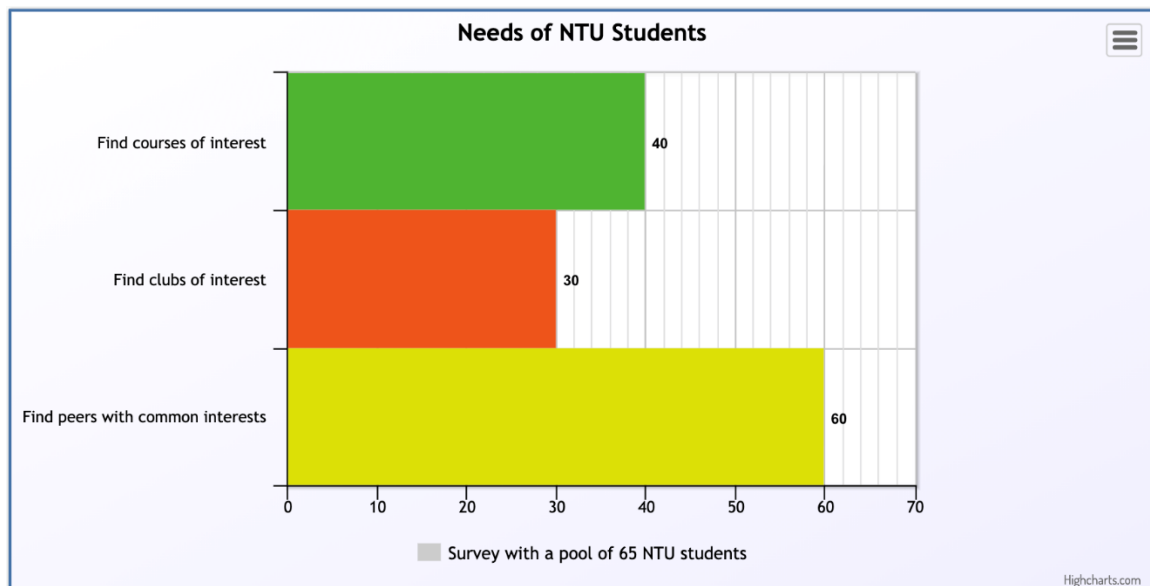


Fig. 1: Survey on needs of NTU Students

Target Specifications

NTUCollab will have three main tabs: modules, clubs and interest groups. After the user has indicated their interests during the registration process using tags, the modules tab will provide the courses they would most likely be interested in as suggested by our recommendation system. It will also provide other information on the course and an overall rating. If the student has already taken the course, they can rate it. The user also has the option of joining the course group to take part in any discussions pertaining to the course using the group chat/post feature.

The clubs tab of NTUCollab will also operate in a similar fashion but for clubs in NTU. It will help students to identify and make better and informed decisions with respect to the clubs and activities they should commit to.

The interest groups tab will help in bringing people with similar interests in NTU together. The unique thing about the interest groups tab is that there are no restrictions to the type of groups. It can be based on whatever interest the users have like skateboarding, art, debating, competitions etc. The users will also have the flexibility of creating their own interest group and inviting people to join it.

These specifications enhanced with proper personalization will definitely satisfy the identified customer needs.

Technology Consideration

Our choice of technology was made keeping user-experience in mind. Seamless integration within the technology stack shall enable a seamless user experience.

Table 1: Technologies used for NTUCollab

Technology	Description
Flutter	An open-source UI software development kit created by Google for cross-platform mobile and web application development than can be used to create a exciting user experience for NTUCollab
Firebase	Google's backend-as-a-service (BaaS) platform with features than can be tuned to power the back end of NTUCollab
Cloud Firestore (Firebase)	Cloud-hosted & scalable NoSQL database which is intuitive to use and is embedded into the backend service of NTUCollab

System Architecture/Platform

Table 2: Platforms and tools used for NTUCollab

Platform/Tool	Description
Git	Distributed Version Control System (VCS) and Source Code Management
GitHub	Code collaboration platform integrated with Git
GitHub Actions	Workflow automation tool with CI/CD pipelines
Android Studio	Integrated Development Environment (IDE)

Emulators	Software application to imitate the Android OS
Figma	Tool used for UI prototyping
Google Cloud Platform (GCP)	Fully managed backend infrastructure on the cloud

System Architecture:

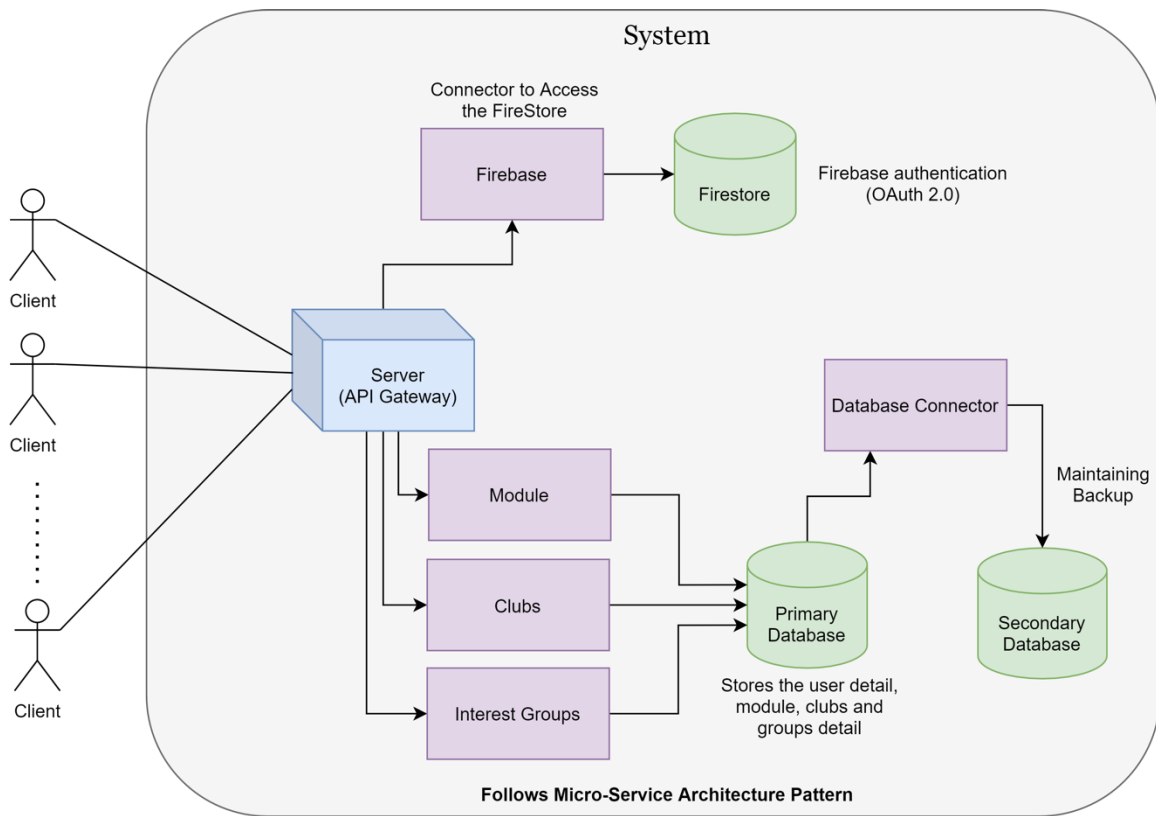


Fig. 2: System Architecture Diagram

Project Management

We have adopted the Waterfall model in our software development life cycle where all activities are carried out in a sequential phase and is dependent upon the previous activities or phases. Firstly, project requirements are solicited along with a clear definition of the product scope. Secondly, to further iron out the requirements, a use-case model and description is generated in the design phase. Thirdly, all development activities are started only after the completion of the first two phases by the development team. Finally, the release team engages in publishing a release plan, followed by QA team to perform necessary testing.

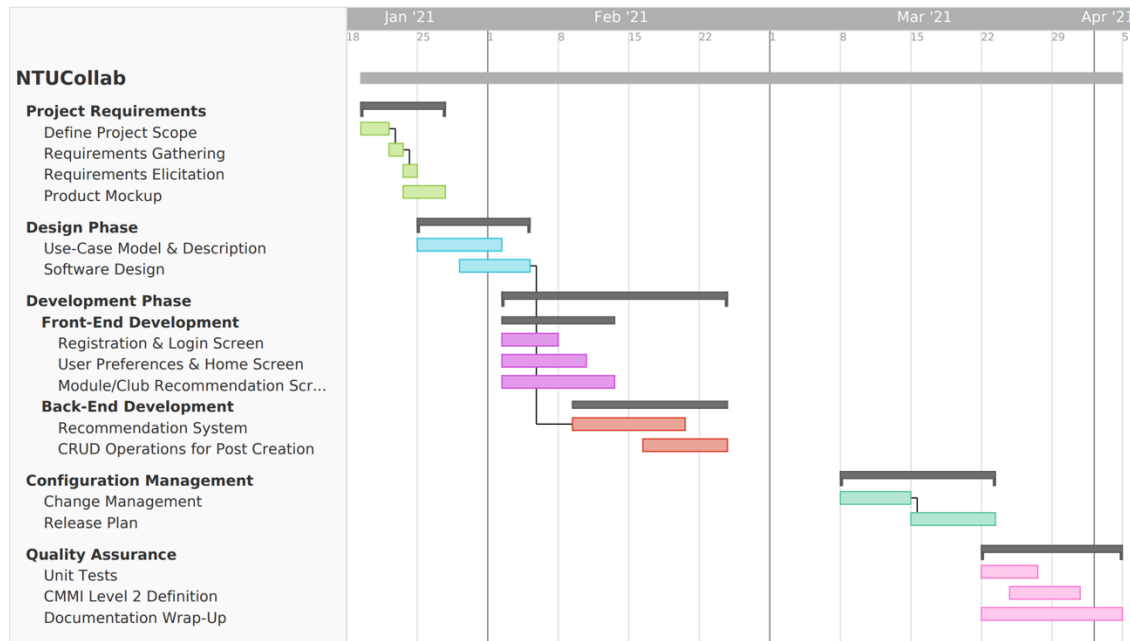


Figure 3: Gantt chart for the project. The solid bars indicate the portions of the tasks that we have accomplished within the timelines.

Deliverables

1. **Detailed requirement specifications** – Detailed use-case model and use-case descriptions.
2. **Technical Prototype (Back-End)** – Deployed cloud back-end on Google Firebase.
3. **Database (Back-End)** – Cloud configured database on Google Firestore.
4. **Technical Prototype (Front-End)** – Cross-platform mobile application (iOS & Android).
5. **Computer Program Code** – Implementation of the project plan including Unit Tests.
6. **Configuration** – Configuration, Changes, and Release plans of the software.
7. **Test Procedures** – Description of Test Cases.

8. **Documentation** – Complete documentation inclusive of QA System on MediaWiki, a collaborate documentation platform.

Budget

Team Eagles has allocated a budget of \$68,824.00 for the prototyping and development of the NTUCollab project. In order to determine the total costs, we have split the line items into various categories such as the employees working on the project, Project Manager, Developers, etc., infrastructure costs such as equipment and office rental, and costs relating to the development of the computer application itself such as technology licenses and hosting services.

The table shown below, lists down all the line items in detail. This is the preliminary distribution of costs and is subject to change in the future.

Table 3: Requested items and funds for initial design.

Item	Supplier	Quantity	Unit Price	Total
Project manager		1	\$30,000.00	\$30,000.00
Project team members		7	\$3,000.00	\$21,000.00
Computers	Dell	5	\$1,000.00	\$5,000.00
Computers	Apple	2	\$1,100.00	\$2,200.00
Technology license	Android	1	\$25.00	\$25.00
Technology license	Apple	1	\$99.00	\$99.00
Back-end Services	Google	1	\$1,500.00	\$1,500.00
Database	Google	1	\$2,000.00	\$2,000.00
Office rental	NTU	1	\$6,000.00	\$6,000.00
Transportation	Taxi	1	\$1,000.00	\$1,000.00
			TOTAL	\$68,824.00

Communication and Coordination with Sponsor

We consider communication and coordination with our sponsors and partners a key aspect of the lifecycle of our project. All updates regarding to the project will be sent to the sponsor contact person on the last working day of every week i.e., Friday by the Project Manager, unless specified otherwise. In the case of a public holiday, the communication will be sent on the following Monday.

Owing to the COVID-19 restrictions in-place, all weekly communication and updates will take place via e-mail, and discussion meetings and conference calls will take place via Microsoft Teams.

All sponsors will be required to acknowledge the receipt of the information received are strongly encouraged to provide any feedback as well as raise any concerns, e.g., change in deadlines, feature request, etc. early.

Team Qualifications

Table 4: Team Qualifications

Name	Experience
Dandapath Soham (Project Manager)	With extensive experience in project management, Soham has delivered high impact projects to strategic clients across Singapore. At organizations like Seagate and Outstrip, he has led diverse teams, managed delivery execution and driven third-party relationships. With experience in backend technologies, infrastructure and the cloud, he is an ideal project manager for NTUCollab.
Gupta Jay (Lead Developer)	Jay has experience in working with machine learning technologies, software engineering, and managing teams of developers to achieve a common goal. He has been involved with several corporations including SAP, Singapore Airlines, and more to manage large teams. He is currently engaged with the NTU Open-Source Society to lead a project on open-source development.
Kanodia Ritwik (Front-end Developer)	Ritwik has significant experience in front-end technologies with expertise in mobile-first applications. He has worked with leading front-end technologies like React, AngularJS and Flutter, at organizations like SAP and Visa. He also works as a freelancer designing websites for small businesses.
Mundhra Divyesh (Front-end Developer)	Divyesh is well versed in frontend frameworks such as Flutter, React.Js and VueJs and has worked with Java, Kotlin and Node.Js for backend development in renowned companies like Panasonic, Equinix and UBS in his previous experiences. He has worked in small teams and will be suitable to lead our frontend team for developing NTUCollab.
Bhatia Ritik (Back-end Developer)	Ritik has hands-on experience in Web Service frameworks and technologies such as Django, Ruby On Rails, or Node.js. He has developed high performance, scalable applications at Autodesk and Panasonic. Experienced with cloud technologies, and system design, he worked with Amazon Web and deployed cloud native services with Prometheus, Grafana and, Jsonnet.
Somani Palak (QA Manager)	Leading a number of QA teams Palak has experience in software and system automation, deployment, support and monitoring of application stacks in live 24/7 environments. At Shopee he was responsible for capacity planning and management, and has worked closely with application engineers, DevOps and network teams.
Bansal Aditya (QA Engineer)	Aditya has substantial experience with performance and security testing. Working at a number of startups he is proficient in testing and coverage tools to effectively troubleshoot hardware and software bugs. As a system QA and automation engineer, he has experience with functional testing via grey-box and white-box methodologies, as well as integration testing with DBunit and Junit.

References

- [1] 9 out of 10 university students reported feeling stressed out regularly: NTU survey finds – NUSSU The Ridge Magazine. (2018, February 26). NUSSU The Ridge Magazine - The Pulse of NUS. <https://theridge.sg/2018/02/26/9-out-of-10-university-students-reported-feeling-stressed-out-regularly-ntu-survey-finds/> (NTU) (Singapore, 26 Feb, 2018)
- [2] NTULearn. (2020). Ntulearn. <https://ntulearn.ntu.edu.sg>
- [3] U-Wave. (2020). NTUSU. <https://www.ntusu.org/u-wave>

Appendix A: Résumés of Team Members

1. Dandapath Soham – Project Manager, Back-End Developer

Soham Dandapath

47-1-889, Hall of Residence 9
24 Nanyang Avenue, Singapore



+65 90846576
soham.dandapath@gmail.com



linkedin.com/in/soham-dandapath
github.com/12dash

EDUCATION

B.ENG | NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE 2018 – 2022
COMPUTER SCIENCE (Major) MATHEMATICS (Minor)

- Pursuing Accelerated Bachelor's Programming offered based on merit.
- Specialization in Data Science and Artificial Intelligence (AI)

ISC (HIGH SCHOOL) | THE SHRI RAM SCHOOL – ARAVALI, INDIA 2018
• Overall Percentage : 97%
• Batch Topper in Physics (100%) and Computer Science(100%)

WORKING EXPERIENCE

MACHINE LEARNING INTERN | SEAGATE TECHNOLOGY, SINGAPORE Aug 2020 – Dec 2020

Building full application from machine learning models to deployment to website to predict the time and yield for the hard disk to come out of the testing process

- Created the data pipeline to fetch from oracle database, feature engineering to select the attributes and creating encoder-decoder models to build a predictive model.
- Made the frontend and backend server to generate report from the model using React and Flask

PRODUCT DEVELOPMENT INTERN | OUTSTRIP, INDIA May 2020 – Aug 2020

Creating dashboard to summarize KPI's of social media platform for social media influencer.

- Responsible for fixing bugs in the main product and researching for APIs.
- Working along the UI team to make the website for the company using React and Ruby on Rails.

SKILLS

LANGUAGE	Python, Java, C, C++, MATLAB
WEB DEVELOPMENT	HTML5, CSS, Bootstrap, JavaScript React, Ruby on Rails, MongoDB, Redux, Express
DATABASE	SQL, XML, Oracle
MACHINE LEARNING	Matplotlib, Seaborn, Plotly, PyTorch, TensorFlow, OpenCV, SKLearn
CLOUD	AWS (SageMaker and EC2), Kubernetes (Kube Flow)Git

CO-CURRICULAR ACTIVITIES

VICE PROJECT OFFICER | DA VINCI SOCIETY, NTU 2019 Aug 2018 – Aug

To organize events and workshops to increase the interest in Robotics and 3d printing

- Organized events held by the robotics section of the society
- Organized two workshops based on Arduino. One on hourglass and other on automated car.

2. Gupta Jay – Lead Developer, Release Engineer

Email: jaygupta2607@gmail.com
GitHub: github.com/GuptaJay

JAY GUPTA

M: +65 9899 3043
LinkedIn: linkedin.com/in/gupta-jay

EDUCATION

Nanyang Technological University, Singapore **Jul 2018 – May 2022**
Expected
Bachelor of Engineering in Computer Science
Specialisation in Artificial Intelligence, Data Science & Analytics, Minor in Business
CGPA: 4.15/5.00
NTU President Research Scholar

Relevant Modules – Introduction to Data Science & Artificial Intelligence, Object-Oriented Programming & Design, Algorithms, Data Structures, Software Engineering, Advanced Computer Architecture

WORK EXPERIENCE

SAP – Software Engineering Intern **Jun 2020 – Dec 2020**

- Drove high adoption of SAP software products and Cloud Platform in the APJ region by building end-to-end prototypes using SAP Intelligent Enterprise portfolio for partners in Banking and High Tech industry to drive customer success.
- Built reference SAPUI5 hybrid applications for Industry Cloud & SAP S/4HANA.
- Tech Stack: AI product portfolio, JavaScript, REST APIs, OAuth, SAP Cloud Platform, SAP Analytics Cloud, SAPUI5.

Singapore Airlines – Software Engineering Intern **May 2019 – Aug 2019**

- Saved more than 1300 hours annually in Customer Loyalty services by automating all Service Recovery transactions globally.
- Reduced bugs on Singapore Airlines website by building a Compliance bot which scans the code monthly.

SKILLS

-
- | | |
|-------------------------|--|
| • Programming Languages | – Python, JAVA, JavaScript, SQL, Flutter (Dart), C++, C, HTML/CSS, Tableau |
| • Development | – TensorFlow, Keras, Pandas, Matplotlib, Scikit-Learn, OpenAI Gym |
| • Online Certifications | – TensorFlow Developer Certification, Neural Networks & Deep Learning (Specialisation – Coursera), Data Science – Probability (Harvard University – edX) |
| • Languages | – English (native) and Hindi (native) |
| • Publishing | – Technical writer at ‘Towards Data Science’ & ‘Towards AI’, world’s leading multidisciplinary STEM publications |

EXTERNAL PROJECTS

Microsoft AI for Accessibility Hackathon – Finalist **Oct 2020 – Nov 2020**

- Enhanced video-conferencing experience for the visually impaired with a solution for Microsoft Teams, with Microsoft Azure leveraging Azure’s AI capabilities.
- Represented Singapore in the hackathon with 180+ teams throughout the Asia-Pacific region.

Reinforcement Learning Warehouse Architecture **Jun 2020 – Aug 2020**

- Automated long term planning of inventory in warehouses for maximum space utilisation and minimum energy consumption with a Reinforcement Learning architecture from scratch using OpenAI and TensorFlow.

Handwritten Digit Recognizer – 350th Worldwide Rank (Kaggle) **May 2020**

- Achieved an accuracy of 99.62% to classify handwritten digits by developing a modified LeNet-5 neural network architecture using TensorFlow, ranking in top 13% of all submissions made worldwide on Kaggle.

News Bias Reducer – Winners at NTU Hackathon (iNTuition) **Oct 2019**

- Reduced bias in news by building a Chrome extension providing contrasting perspectives using BERT Natural Language Processing embeddings and K-means clustering to reduce bias using tweets.

ACADEMIC PROJECTS

Gamify Teaching and Learning – Mobile Application **Jan 2020 – May 2020**

- Built a mobile game driven by data analytics using Flutter (Dart) & Firebase to gamify and socialise teaching and learning of Software Engineering courses in NTU and make the learning process more interactive for students.

3. Kanodia Ritwik – Front-End Developer, Release Engineer

RITWIK KANODIA

ritwikkanodiain@gmail.com

HP: +65 8266 6019

github.com/ritwikkanodia

linkedin.com/in/ritwikkanodia

EDUCATION

Nanyang Technological University, Singapore

Bachelor of Engineering. In Computer Science | Minor in Business

Aug 2018 – Jun 2022(Expected)

> Specialization in AI, Data Science and Analytics

> Cum. GPA: 4.19/5.00

> **Relevant Coursework:** Data Science & Analytics, Artificial Intelligence, Machine Learning, Databases, Data Structures, Algorithms, Engineering Mathematics, Advance Software Engineering, Operating Systems.

WORK EXPERIENCE

SAP, Singapore – Machine Learning Developer, Intern

Aug 2020 – Dec 2020

- Contributed to SAP's flagship Machine Learning-powered AI technology, Service Ticket Intelligence.
- Implemented a service ticket recommendation system capable of finding top 5 similar tickets out of a pool of 60K tickets with about 73.5% accuracy using pre-trained Bert model.
- Increased system performance by around 7% by allowing customers to fine-tune Bert model on their dataset.
- Achieved at least 90% accuracy by integrating this Bert system with bm25 model in production code.

VISA, Singapore – Software Engineer, Intern

May 2020 – Jul 2020

- Collaborated to develop a React progressive app to help small businesses recover from Covid-19 pandemic.
- Leveraged Visa APIs to locate local suppliers and enable reconciliation of supply chain.
- Calculated recovery score based on quantifiable factors; utilized data analytics to identify weaknesses.
- Researched literature on the banking and finance industry, with focus on the payment eco-system.
- Formulated white paper solution on how Visa can partner with telecom companies to make India cashless.

TCG Digital, India – Full Stack Developer, Intern

May 2019 – Jul 2019

- Designed a web application leveraging the Spring MVC Framework, Spring security & Maven tool in Java.
- Accomplished an Employee Portal for Human Resources to store and manage employees in the company.

SKILLS

Coding Languages: Python, Java, JavaScript, HTML, SQL.

Machine Learning: TensorFlow, scikit-learn, NumPy, pandas, NLTK, OpenCV.

Development: RESTful APIs, Spring Boot, React, Django, Flask, Flutter.

Languages: English, Hindi, Bengali.

SELECTED PROJECTS

Expression Mode – Finalist, Microsoft AI for Accessibility Hackathon

Dec 2020

- Designed an application that uses AI to provide live sentiment analysis during video conferencing.
- Utilized OpenCV for video manipulation and Microsoft Azure API for sentiment detection.
- Presented to a panel of industry leaders; selected as a finalist out of 29 teams in Singapore.

Car Price Prediction – Machine Learning + Web Application

Dec 2020

- Developed a web application for predicting car prices in the USA with ~95% accuracy.
- Deployed a Flask API as a server in the backend and a JavaScript app as a client in the front-end.
- Used a trained Random forest regressor model for prediction and displayed the result on client UI.

Educational Gaming Application – Cross-Platform Mobile Application

Feb 2020 – Apr 2020

- Developed 'SSADPro', a quiz gaming application to educate students on Software Development Life Cycle.
- Implemented separate modules for students and instructors; students can play in adventure mode or attempt assignments; instructors can send assignments or track student progress in adventure mode.
- Designed a feature to allow students to challenge each other and climb up the leaderboards.

Privacy-Preserving Machine Learning – NTU President Research Scholar

Aug 2019 – Jul 2020

- Designed a neural network to detect credit card fraud.
- Deployed TensorFlow-Privacy library to implement differentially private training of models.
- Aggregated differentially trained Models of multiple banks in TensorFlow Federated Learning framework.

CO-CURRICULAR ACTIVITIES

NTU Debating Society - Vice-President

Aug 2020 – Jun 2021

- Lead the society to organize multiple debating events with combined participation of more than 500 members.
- Laid out a constitution, set up election procedure and boosted membership of the society.

4. Mundhra Divyesh – Front-End Developer

Divyesh Mundhra

Phone – (+65) 9612 2779 Email – divyesh001@e.ntu.edu.sg Github - <https://github.com/divyeshmundhra>
LinkedIn - <https://www.linkedin.com/in/divyesh-mundhra-03921317a/>

Education:

Nanyang Technological University, Singapore.

Aug 18 – Jun 22(Expected)

- Bachelor of Engineering – Computer Science with a Minor in Business.

Work Experience:

Full Stack Developer – Internship

Aug 20 – Jan 21

Equinix Asia Pacific Pte Ltd, Singapore.

- Developing the Front-End for an Equinix Customer Portal using VueJS.
- Integrating the client side Front-End and server side Back-End by using Kotlin and Spring Framework.

Deep Learning Researcher - Internship

May 20 – July 20

Panasonic Research & Development Centre, Singapore.

- Used OpenCV, Librosa, PyAudio for Audio / Video Processing in Python for development of Smart Appliances.
- Created a data pipeline which could be used for Speaker Recognition and Speaker Diarization tasks.

Machine Learning / Cybersecurity Analyst

Feb 20 – May 20

UBS – Union Bank of Switzerland, Singapore.

- Developed a Risk Assessment Model using Machine Learning which could be used to calculate the overall risk, based on attributes of vulnerability using common vulnerabilities and exposures.
- Built a Full-Stack Dashboard like application using React and Flask to deploy the model as a Web App.

Research Assistant

Aug 19 – May 20

School of Computer Science and Engineering, NTU, Singapore.

- Participated in a strictly invitation based research project on Predictive Maintenance and Analytics.

Front-End Developer - Internship

Nov 19 – Dec 19

DataKrew, Singapore.

- Worked on the Inventory Management website by developing Front-End using AngularJs.

Academic Projects:

SGFit (Dart) - A smart nation app built using Flutter.

Feb 20 - Apr 20

StudyAtUni (Dart) - An app built using Flutter to teach students in a gamified manner.

Feb 20 - Apr 20

What's Cooking (Python) - Data Science and Machine Learning Prediction Model.

Sep 19 - Nov 19

Movie Booking and Listing Application (Java) - Cinema management system.

Sep 19 - Nov 19

Cafeteria Recommendation System (Python) - Cafeteria suggestion based on user's choices.

Feb 19 - Apr 19

Skills:

Programming Languages: Python, Javascript, Java, Kotlin, HTML/CSS, Dart, C, C++, TypeScript, NativeScript.

Technologies and Frameworks: NodeJS, VueJs, AngularJS, ReactJS, Flutter, MySQL, MongoDB, Flask, Django, OpenCV

Data Science/Machine Learning Tools: Tensorflow, Keras, PyTorch, Matplotlib, Pandas, Numpy, Scikit.

Co-Curricular and Voluntary Activities:

NTU Model United Nations – Chief of Staff (Head of Operation, Logistics and Finance)

Aug 18 - Present

- Planned, liaised and negotiated with vendors for conference attended by more than 600 delegates each year

NTU Management Consulting Club – Student Consultant

Jan 20 – Present

NTU Debating Society - Tabbing Manager

Aug 18 – May 20

Active member of NTUOSS (Open Source Society) and NTU Blockchain club.

Aug 18 – May 20

Supervised and led a project spanning 5000 students to provide relief for flood affected victims.

Feb 18

5. Bhatia Ritik – Back-End Developer

RITIK BHATIA

bhatia.ritik5@gmail.com | +65 85154610 | Room 44-1-820, Hall 8, 26 Nanyang Avenue, Singapore 639812
GitHub link: <https://github.com/ritikbhatia>

EDUCATION

Nanyang Technological University Aug 2018-Present, Singapore **Bachelor of Engineering in Computer Science (Minor in Business)**

CGPA: 4.85/5.00

- **NTU Science & Engineering Undergraduate Scholar** (by Ministry of Education, Singapore and NTU): Complete cover of tuition fee and accommodation costs, with a monthly living allowance
- **Dean's List** (Academic Year 2018-19): Awarded to only top 5% of the cohort, for excellent academic performance • **Accelerated Bachelor Programme**: an opportunity for excelling students to graduate in 3.5 years instead of 4 years • Active member of the **Open source society** (NTU OSS)
- **Undergraduate Research Experience on Campus (URECA)**: a strictly invitation-based research project on the topic 'Privacy preserving using Machine Learning' using techniques of Differential Privacy
- **Online Courses**: Data Structures and Algorithms by MIT, Introduction to Computer Science by Harvard University

PACE Junior Science College May 2016-May 2018, Mumbai, India • Positioned in **top 1%** out of 1.4 million candidates in state-wide board exams

Lilavatibai Podar School Until May 2016, Mumbai, India • **Ranked 4th nationwide**, with a score of 98.6% in the national board exam

WORK EXPERIENCE

Ramco Systems May 2019-Aug 2019, Singapore **Software Developer (Intern)**

- Developed a centralized login system: **Single-Sign-On (SSO)** for all applications of Ramco
 - **Saved** valuable man-hours of several teams, which would otherwise be required for creating individual login pages for each application
 - Improved the **security** of all linked applications by enforcing strict authentication checks in SSO •
- Created a website enabling an administrator to easily maintain a database
 - **Improved efficiency** regarding maintenance of user and application information in Ramco by indexing database and ensuring a user-friendly interface
 - Used NodeJS for the backend and React for developing the frontend
- Worked on linking the SSO and the admin website
 - Successful in simplifying the task of establishing user access levels for applications
- Closely worked with the **Innovation Lab** to add functionalities to their products such as handling user sessions using JSON web tokens (JWT), encryption of sensitive data being stored, securing HTTP requests by creating middlewares, creating relations in non-relational databases like MongoDB and fixing small bugs like cross-origin issues

Student Consultant Aug 2019-Oct 2019, Singapore **Systems on Silicon Manufacturing Company (SSMC)**

- Selected amongst 170 candidates for NTU PEAK, an intensive leadership program to groom **high calibre** NTU students into industry-relevant future leaders for the workplace and the community
- Collaborated with experienced engineers and managers at SSMC, to discover and tackle real-life business challenges • Designed innovative solutions including closed-loop communications, digitalised learning and business simulations to **improve business acumen** and strategic thinking of Engineering Managers beyond their immediate departments

SKILLS

- Programming Languages: C, Java, Python, Javascript, HTML/CSS
- Databases: MongoDB, MySQL
- Technologies and Frameworks: React, NodeJS, ExpressJS
- Data Science, Analysis and Visualization tools: matplotlib, scikit, pandas, numpy

ACHIEVEMENTS

- Reached **top 7** in the **hackathon** organised by the National University of Singapore
- **All India Rank 720** (from 1.3 million candidates) in JEE Advanced- the most competitive engineering entrance exam in India, for admission into the prestigious Indian Institutes of Technology (IITs)
- Placed in **top 1% in India** at International Physics Olympiad and **top 1% in the state** at International Chemistry Olympiad • Ranked **55** in MHT-CET (400,000 candidates) - a competitive entrance exam
- **Chief Programmer**: organized and led a team of 80 students, for the 5-day freshmen orientation in 2019

6. Somani Palak – QA Manager, QA Engineer

Palak Somani

Final Year Computer Science Student at Nanyang Technological University



EXPERIENCE

Shopee

JUL 2020 TO JAN 2021

Software Engineering Intern (Data Engineer)

Shopee (Owned by Sea Group) is the leading online shopping platform. It provides customer with an easy, secure & fast shopping experience through its strong technology platform. It is listed on NYSE with a market capitalization of US\$ 85 bn. • Worked with Spark and Spring framework to provide big data solutions to accelerate growth. • Worked with WebSockets to add a real time user-collaboration feature within existing applications. • Worked with ELK stack to implement centralised log management. • Created Python and Bash scripts to automate tasks.

Visa

MAY 2020 TO JUL 2020

Software Engineering Intern

VISA is a global payments technology company working to enable consumers, businesses, banks & government to use digital currency. It is listed on NYSE with a market capitalization of US\$ 430 bn. • 1st place winner of the VISA 2020 global Intern Hackathon – Payments in the Pandemic. • Collaborated & created a universal in-chat peer to peer (P2P) payment solution to help users cope with the disruptions caused by Covid-19 pandemic. • Participated in global intern case challenge to prepare a whitepaper for a solution to displace cash from the economy with digital money.

Nanyang Technological University

AUG 2019 TO JUN 2020

Undergraduate Research Assistant

• Horizontal Federated Learning in Healthcare sector – Shortlisted under URECA program to research on applying federated learning on healthcare dataset. Nominated to present my findings at the International Conference of Undergraduate Research (ICUR) in September'20.

KPMG

NOV 2019 TO JAN 2020

Management Consulting Intern

KPMG is a global professional service organization with network in 147 countries and over 220,000. • Provided data analytical and visualization services to a banking client. • Led a project to help in data prediction of defaults using deep neural networks. Improved the accuracy of the model by 7.9% as compared to the previous model being used.

EDUCATION

Nanyang Technological University

2018 TO 2022

Undergraduate Degree

Junior at NTU (Nanyang Technological University), Singapore

- Major in Computer Science
- Minor in Business

University of Melbourne

2019 TO 2019

Bachelor's degree

Exchange program for one semester starting from 20th July 2019 till 30th December 2019. Obtained H1 grade in all subjects.

Udacity

2019 TO 2019

Nanodegree

SKILLS

Python (Programming Language), Deep Learning, Java, Accounting, Marketing, Research, Machine Learning, Object-Oriented Programming (OOP), Algorithms, Finance, Agile Project Management, Project Management, Operations Management, Scrum, SQL, C (Programming Language), Microsoft Office, Microsoft Word, Microsoft Excel, PowerPoint, Pandas (Software), Matlab, TensorFlow, PyTorch, R, Management, Leadership, Back-End Web Development, Spring Framework, Front-end Development, WebSocket

7. Bansal Aditya – QA Manager, QA Engineer

Aditya Bansal

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LinkedIn: [linkedin.com/in/aditya-bansal-43b211195](https://www.linkedin.com/in/aditya-bansal-43b211195)
GitHub: github.com/Aditya777

EDUCATION

Nanyang Technological University, Singapore (Expected)	Aug 2018 – July 2022
<ul style="list-style-type: none">Bachelor of Engineering (Computer Science Major)Selected in the Dean's List 2019/20 (Top 5% of the cohort) for the School of Computer Science & Engineering	CGPA: 4.76 / 5.00
University of Melbourne, Australia	July 2019 – Dec 2019
<ul style="list-style-type: none">Semester Exchange Program	Grade: H1 (First Class Honours)

PROFESSIONAL EXPERIENCE

SAP Asia Pte Ltd, Singapore Full Stack Developer	May 2020 – December 2020
<ul style="list-style-type: none">Part of AI Business Services. Working on ML recommendation system for SAP Learning Management System (LMS)Tech Stack: Python (Flask framework), MongoDB, Jenkins Pipeline for CI/CD, deployment on Cloud Foundry	
Google Cloud Sprint Program	May 2020 – August 2020
<ul style="list-style-type: none">A 10-week program for selected students from universities across Singapore, with mentorship from Google Engineers, and the certification exam of Google Associate Cloud Engineer (ACE)	
Amazon Web Services (NTU PEAK Leadership Program) Student Consultant	Feb 2020 – March 2020
<ul style="list-style-type: none">Designed creative solutions to promote the AWS Educate Learning Platform for university studentsThe team adjudged as champions and won the Best Ideation Award for most innovative recommendationsWon the Most Promising Leader Award	
Rivigo Pvt Ltd (A logistics tech startup) Software Intern	May 2019 – July 2019
<ul style="list-style-type: none">Worked with tech platform team, developed backend APIs in GoLang and performed database operations in MySQLSuccessfully completed deliverables and received positive feedback from the mentor	

SKILLS & CERTIFICATION

Programming Skills: Python, Java, SQL, MATLAB, Machine Learning

Certifications

- Google Cloud Certified – Associate Cloud Engineer

Languages: English, German

ACADEMIC PROJECTS

Undergraduate Research Project (URECA Program) Title: Classification of EEG signals using Deep Learning Techniques for Brain Computer Interfaces	Jan 2020 – July 2020
<ul style="list-style-type: none">Research on analysing EEG signals for the development of BCIs, and submitted a review paper to the Proceedings of URECA Undergraduate Research 2020Received NTU President Research Scholar Certificate	
Data Science Project Title: Analysis of World Happiness Report 2019	Jan 2019 – May 2019
<ul style="list-style-type: none">Analysed World Happiness Report 2019, using Machine Learning techniques of Linear Regression and ClusteringDetermined factors affecting world happiness with high correlation	