

## AMIT LALGUDI VAIDYANATHAN

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### EDUCATION

Dhirubhai Ambani International School, Mumbai, India.

August 2023–June 2025

-*International Baccalaureate Diploma Program, Grade 11/12*

Jakarta Intercultural School, Jakarta, Indonesia

August 2018–June 2023

-*High School Diploma + APs up to Grade 10*

### STANDARDIZED TESTS AND APs

- ACT: 35/36 (Math 35, Science 36, English 35, Reading 33) July 2023
- AP Examinations: Computer Science: 5/5 (May-2022); Physics 1: 5/5 (May-2023)
- Institute for Mathematics and Computer Science Florida (IMACS): Courses completed July 2020-December 2021
  - University Computer Science 1, Grade A+ (99%) – 3 college credits
  - University Computer Science 2, Grade A+ (98%) - 3 college credits
- HSK Chinese proficiency test: Level 3

### CIVIL AND ENVIRONMENTAL ENGINEERING RESEARCH AND EXPERIENCES

#### Research

**Research team member, Sustainable Infrastructure Modelling, with Prof Albert Thomas, Department of Civil Engineering, Indian Institute of Technology (IIT), BOMBAY** June-Oct 2024

- I joined Prof Albert Thomas' team as a rising senior amongst PhD students and specialists, working on simulation analytics and energy modelling of buildings, to optimize energy needs through sustainable sources based on type and locational specifications. The overall objective of the large construction project is to create energy efficient buildings and communities.

#### **Independent research – Use of AI in Waste Management**

June–October 2023

- Conducted independent research on the use of different neural network types in Image Recognition by testing created neural networks on a dataset of 2000+ full-size images and the role of such a system in a waste management protocol with the goal of creating a circular economy by repurposing solid dry waste. Paper pending publication.

#### **Independent research – use of biomass briquettes as coal substitutes**

July–November 2023

- Conducted independent research and experimentation on biomass briquettes created from different materials and their respective thermal efficiencies to qualify biomass briquettes as a viable substitute for coal, thereby reducing toxic airborne pollutants from coal combustion.

#### **Independent Experimentation**

##### **Design of low-cost Air purifier using algae microbiology**

February–September 2022

- Designed and created prototypes of cost-effective (<\$40) algae-based air purifiers, with a Corsi/Rosenthal box fan filter. Deployed the prototypes to validate efficacy in low-income communities around Jakarta.
- Submitted paper to British Science Association for the Crest Gold award, won it in September 2022.

##### **Design of portable biodigester to generate energy using waste**

June 2022–January 2023

- Designed and fabricated a portable biodigester, which takes organic & agricultural waste and uses it as biofuel to generate energy on a small scale, powering several houses based on their waste output. We took the model to Conrad Challenge and won the Innovator award.

### WORK EXPERIENCE

#### **Intern at REKOSISTEM - Climate-Tech Startup Jakarta, Indonesia**

May 2021–Present

- Created and continuously improved consumer interface of Rekosistem app. The app helps customers segregate waste in their homes into Wet and Dry waste and schedule daily pick up.
- Created technology stack to help with Dry waste segregation, using AI powered Image recognition. Created and prototyped a convolutional neural network for image classification using Tensorflow, SciKit, and Keras. Final efficiency levels ranged from 90-97% accuracy.
- Used the neural network in conjunction with specialised cameras to collect analytics on waste types in disposal in bins around Jakarta (Rebox).

## WORK EXPERIENCE contd.(Observerships):

- **Total Environment group:** India's leading construction company. Spent 2 days with design team and construction site of green roofs, which help reduce the amount of internal energy required for cooling/ heating
- **Armstrong Worldwide Industries:** India's leading internal Environmental quality provider. Spent 2 days with project teams leading reduction of embodied carbon in buildings.

## HONORS AND AWARDS

- Crest Gold award from British Science Association in Sep 2022 for the Algae based low-cost Air purifier.
- Conrad Challenge Innovator award: placed among top 200 teams globally in the Energy-Environment category.
- MATHCOUNTS 2020: Placed 3<sup>rd</sup> in all Southeast Asia November 2020
- Waterloo CEMC Fermat Competition: Certificate of Distinction. Tied 2<sup>nd</sup> in school. February 2022
- First Tech Challenge India: joint national champions of India at the Goa International Robotics Festival. I was the head coder of the winning FTC team, 25100 MAD Engineers. January 2024

## LEADERSHIP INITIATIVES

**Tech and Engineering Society, Founder and President, Jakarta Intercultural school** August 2021–June 2023

- Founded and ran a club providing a platform for students to pursue their interests in STEM fields.
- Wrote a collaborative paper with club members and officers using machine learning to analyse Jakarta's air pollution and provide possible solutions.

**Robotics Club, Co-President, Dhirubhai Ambani International School, Mumbai** August 2023–Present

- Led a design initiative among students of Grades 8–10 in designing a BeeBot
- Taught skills in CAD, coding with C++ and Java, 3D Printing, and circuitry

**Bye Bye Plastic Bags club, Finance officer, Jakarta Intercultural School** August 2022–June 2023

## MUSIC ACHIEVEMENTS

- Yamaha Grade 9 Piano February 2016
- Associated board of Royal Schools of Music (ABRSM)
  - Music Theory Grade 5 (Completed Grades 1-5, passed with merit) March 2017
- ABRSM Grade 8 Piano (Completed Grades 1-8) January 2022
- Associate of Royal Schools of Music (ARSM): currently pursuing performance-focused qualification
- **Independent academic research conducted on music theory and history** June–September 2022
  - Conducted independent research on the historical connection between anti-Semitic ideas and character depictions in Richard Wagner's operatic works and Adolf Hitler's early philosophy, as well as their historical significance to the rise of the Nazi ideology in the German people through the popularity of the *Dolchstoßlegende*.

## COMMUNITY OUTREACH

**NasiBox Initiative, Jakarta, Founder & Organiser** August 2021–June 2023

- Founded, organised, for 10,300 meals distributions for the local Indonesian community after prayers every Friday for 100 weeks. Found sponsors within the Indian community in Indonesia to provide 100 meals every week.

**Rachel House Indonesia, Member/Volunteer** August 2021–June 2022

- Raised approximately 50 million IDR (~\$3400) for terminally ill children and their families through fundraising initiatives.

**Bye Bye Plastic Bags Club, Jakarta Intercultural School, Finance Officer** August 2022–June 2023

- Organised 9 beach clean-up initiatives in various beaches around Jakarta.
- Pioneered waste segregation practices on two school campuses.

**ToyBank NGO, Mumbai, Volunteer** August 2023–Present

- Spent 25+ hours volunteering at Gandhi Bal Mandir School.
- Taught kids of grades 3 and 6 essential skills in Geography, Mathematics, and Problem Solving through board games

## SOCIAL JUSTICE

**Asia Untold, Co-Founder and Contributor** January 2021–Present

- Began a teen-led Instagram account that brings awareness to Asian issues not extensively covered by the mainstream media.
- Gained 5000+ followers & 200k+ impressions.

## SWIMMING

- Represented the school Swim Team in each of the four schools in Bangkok, Manila, Jakarta and Mumbai

## INTERESTS:

- Reading, Marine biology, Philosophy,
- Combat sports, Martial arts, Chess, Swimming