Akshay Ballal

Date of birth: 03/12/1995 | **Nationality:** Indian | **Phone number:** (+91) 7762844196 (Mobile) | **Email address:** arballal95@gmail.com |

Address: C-604, Emami Tejomaya,OMR, Egatur, 603103, Chennai, Tamil Nadu, India (Home)

About me:
I am passionate about building new technologies that push the boundaries of the status quo. My mix of knowledge in both mechanical systems and software development allows me to build more holistic systems and products. I have experience in building additive manufacturing machines and technologies and have put together several machines from scratch. I am a co-inventor 7 granted patents in the field of composites and additive manufacturing.

EDUCATION AND TRAINING

03/08/2013 – 03/06/2017 Ranchi, India
BACHELOR OF ENGINEERING (MECHANICAL) Birla Institute of Technology, Mesra

Address Birla Institute of Technology, Mesra, Ranchi, India | **Website** www.bitmesra.ac.in |

Field of study Engineering, manufacturing and construction | **Final grade** 7.96 |

Thesis Design of Regenerative Shock Absorber

01/06/2011 – 01/06/2013 India
SENIOR SCHOOL CERTIFICATE Chettinad Vidyashram

Describe the subjects or topics that you learnt.

Address RA Puram, Chennai, India | **Website** https://chettinadvidyashram.org/ | **Final grade** 93.8

2009 – 2011
SECONDARY SCHOOL CERTIFICATE St. Johns Senior Secondary School

Address Mandaveli, Chennai | **Website** https://stjohnscbse.com/ | **Final grade** 96

05/11/2016
INTRODUCTION TO COMPUTER SCIENCE AND PROGRAMMING USING PYTHON MITx

- A Notion of computation - The Python programming language - Simple algorithms - Testing and debugging - Introduction to algorithmic complexity - Data structures

Website https://courses.edx.org/certificates/0a3d508a4bc546ab8324e488a76a0ab8 |

Field of study Software and applications development and analysis

08/03/2018
MACHINE LEARNING Stanford Online

Build machine learning models in Python using popular machine learning libraries NumPy & scikit-learn Build & train supervised machine learning models for prediction & binary classification tasks, including linear regression & logistic regression

Website https://www.coursera.org/account/accomplishments/verify/WEAWUQP9ER45 |

Field of study Software and applications development and analysis

Link https://www.coursera.org/account/accomplishments/verify/WEAWUQP9ER45

01/02/2023
DEEP LEARNING SPECIALIZATION Coursera

Website https://www.coursera.org/account/accomplishments/specialization/certificate/EQXBTTW29QN5

WORK EXPERIENCE

01/09/2019 – CURRENT Chennai, India
CHIEF PRODUCT OFFICER FABHEADS AUTOMATION PRIVATE LIMITED

Lead an R&D team of 10+ members across multi-disciplinary functions
Create product roadmap and strategies
Create proposals for new products and projects
Manage and create new intellectual property (Patents, software copyrights, trademarks)

Achievements
- Co-inventor of 7 granted patents in the field of composites and additive manufacturing
- Built Asia's and India's first Carbon Fiber 3D Printer
- Developed and built POC for India's First AFP Winding Machine
- Built India's fastest Pellet based 3D Printer

Business or Sector Manufacturing | **Department** Higher Management |

Address First Floor, Plot No. 86, 14th Link Street, , Venkateshwara Colony, Nehru Nagar, Kottivakkam, 600041, Chennai, India

Email akshay@fabheads.in | **Website** www.fabheads.in

Links https://www.youtube.com/watch?v=wbnzM_H04qM&t=14s | https://www.youtube.com/watch?v=7p62mFohdr0&t=7s

01/12/2017 – 01/09/2019 Chennai, India
HEAD, ENGINEERING FABHEADS AUTOMATION PRIVATE LIMITED

- Lead a team of 6 engineers (3 Mechanical, 2 Electronics and 1 Software) to develop Minimal Viable Products (MVP) of our industrial 3D printers
- Conduct Preliminary Design Reviews and Critical Design Reviews to make sure the design team is heading in the right direction
- Process all the engineering documents including Engineering Bill of Materials, Engineering Drawings, Process Documents, Assembly Documents
- Interact with fabricators and vendors to realize the most efficient and economical manufacturing processes for the parts

Business or Sector Manufacturing | **Department** R&D

01/07/2017 – 01/12/2017 Chennai, India
MECHANICAL DESIGN ENGINEER FABHEADS AUTOMATION PRIVATE LIMITED

- Design and Develop the industrial 3D printers for Fabheads
- Generate all the engineering documents for the printers including 3D CAD (Solidworks), EBOM, Engineering Drawings with GD&T, and Assembly Documents.
- Create wiring diagrams for the printers
- Work with manufacturing vendors to make sure of timely and high-quality manufacturing of precision parts
- Design Schematics of the controller motherboard for the 3D printer

Business or Sector Manufacturing | **Department** R&D

01/12/2016 – 01/06/2017 Mumbai, India
PRODUCT DESIGN INTERN CARNOT TECHNOLOGIES

- Devise techniques for thermal management of the product and perform several simulations to analyze the internal temperature profile of the device.
- Perform vibration analysis of the product and develop a new enclosure design for increasing the life of the product in harsher environments.

- Work on the design of a new product which would be used for Security and Tracking of Motorbikes

Business or Sector Information and communication | **Department** R&D | **Website** www.carnot.co.in

01/05/2016 – 01/07/2016 Chennai, India

MECHANICAL DESIGN INTERN FABHEADS AUTOMATION PRIVATE LIMITED

- Design and Develop a slitting machine to slit wide tapes of Carbon Fiber to narrower tapes.
- Generate all the engineering documents for the printers including 3D CAD (Solidworks), EBOM, Engineering Drawings with GD&T, and Assembly Documents.
- Create wiring diagrams for the printers
- Work with manufacturing vendors to make sure of timely and high-quality manufacturing of precision parts
- Design Schematics of the controller board

DIGITAL SKILLS

Programming and Software Development

Javascript | Rust Language | HTML | Git | Linux | MATLAB | Python | C

Mechanical and CAD

AutoCAD | Catia | Ansys | Fusion 360 | SolidWorks | Simulink

Office

Microsoft Powerpoint | Zoom | Windows | Microsoft Excel | Microsoft Word | Microsoft Office | LaTeX

Electronics

Use of board views and schematics | Arduino

LANGUAGE SKILLS

Mother tongue(s): **MARATHI**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C2	C2	C2
HINDI	C1	B2	C1	C1	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

ADDITIONAL INFORMATION

PROJECTS

03/08/2017 – 01/12/2018

Design and Development of a High Temperature 3D Printer Lead Engineer

Development of a 3D printer that can print high-temperature materials like PEEK, PEI, and PAEK for aerospace and biomedical applications. This printer uses the extruder head that prints inside a heated chamber that is completely isolated from all the electronics and drive components

Link https://www.youtube.com/watch?v=w88EO4ZeqS8

08/06/2018 – 01/10/2019

Design and Development of a Large Scale 3D Printer Lead Engineer

I lead the design and development of a 1 meter by 1.5 meter 3D Printer with a pellet extruder. I was responsible for the concept to commercialization process of the whole machine. I lead a team of 3 Mechanical Engineers and 1 Electronics Engineer and 1 Software Engineer on this project.

04/09/2019 – CURRENT
Design and Development of Asia's First Continuous Fiber 3D Printer Chief Product Officer

This is my first project as the Chief Product Officer at Fabheads. I was involved in conducting the preliminary design reviews and the critical design reviews. I was also involved in the software development of the printer so that the software worked seamlessly with the hardware.

Link https://www.youtube.com/watch?v=wbnzM_H04qM&t=33s

01/03/2020 – 01/06/2022
Design and Development of a 5 Axis Fiber Placement Machine Chief Product Officer

This machine was developed as a proof of concept to demonstrate fiber tape placement based winding for a defense organization. We were awarded a grant and a recognition for demonstrating this unique technology that can be used to fabricate rocket casings, high pressure cylinders and other composite products.

PUBLICATIONS

A Double Chamber Apparatus and Method for Three-Dimensional Printing – 2018

WO-2020030964-A1

A System and Method for Preparing Pre-Impregnated Continous Fiber Tapes and Filaments – 2021

WO-2022034491-A1

Tow Placement Process – 2021

WO-2022029803-A1

An Apparatus and System for Depositing Fiber Material – 2021

WO-2022029803-A1

Short-length and Efficient Liquid Cooled Dispenser Method – 2021

WO-2021199062-A1

Short-length and Efficient Liquid Cooled Dispenser – 2021

WO2021199061-A1

A Composite Fibre Structure and the Process of Manufacturing Thereof – 2021

WO-2021186480-A1