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# Sumegh Paltiwale

DATA ANALYST, RESEARCHER, TECHNOLOGIST, AND A FREE SOFTWARE ENTHUSIAST

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## Education

### Masters of Science, Computer Science

DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF MUMBAI

Mumbai, India

2017

### Bachelor of Engineering, Instrumentation Engineering

WATUMULL INSTITUTE OF ELECTRONICS ENGINEERING AND COMPUTER TECHNOLOGY, MUMBAI

Mumbai, India

2014

### Higher Secondary School

SAINATH JUNIOR COLLEGE

Navi Mumbai, India

2008

### Secondary School

ATOMIC ENERGY CENTRAL SCHOOL

Mumbai, India

2006

## Work Experience

### Tata Institute of Social Sciences

RESEARCH COORDINATOR

Mumbai, India

August 2019 - Till date

- Working the the project ITE (Integrated approach to Technology in Education, winner of 2019 eNabling North East Development Award), seeded by Tata Trusts
- Development and maintance of portals for the project(Usually on Wordpress and PHP)
- Analytics of the courses and corresponding activites on OpenedX-based platform(TISSx)
- Contribution in content and documentation of free course on usage of ICT in education as a course team member Course Link
- Development of browser-based plugin in JavaScript for Text-mining of online community of practices channels(Analysing the WhatsApp data)Plugin Link. presented in OCCE 2020 Conference
- Statistical analysis and reporting of the data-sets from the fields (Using SPSS, R,and Python)
- Research and implementation of digital badges for e-learning platforms using Badgr, a platform for backpacking and distributing Digital badges, developed by Mozilla Open Badge Project
- Documentation of research literature
- Development of the graphics for project's research material and OCCE 2020 Conference(Conference Page Link)
- Part of Local Organizing Team for OCCE 2020 conference managing the technical aspect

### Tata Institute of Social Sciences

RESEARCH ASSISTANT

Mumbai, India

May 2017 - Apr 2019

- Development of JavaScript based plugins and maintainance on Django/Python based LMS and CMS
- Involved in authoring/maintaining and analytics of the data of gStudio(Django/Python) platform as well as TISSx (edX-based) platform
- Management of Computer Lab at TISS M-Power center and conducting sessions for training free and Open Source softwares
- Co-initiated the CLlx-ELeCT (E-learning for Community Technology) initiative at TISS-M-power learning center at M-ward (Mumbai) where the digital literacy course is being run for underprivileged learners.
- Managing the communication channels for Mathematics teachers using various Communities of Practices and documentation of analytics.
- Facilitated the digital literacy course by teaching usage of Free and Open Source tools. Also contributed in development of teachers courses for teaching using dynamic mathematics software.
- Development and documentation of course content for usage of ICT in Mathematics Education for students (Linear Equation, Geometric Reasoning, and Proportional Reasoning modules)
- Organizing and Facilitating TPD workshop on usage of free and opensource technology in education for teachers in their classroom in government schools in Rajasthan, Chattisgarh, Telangana and Mizoram.
- Graphic designing (especially for posters) using Inkscape, GIMP and other opensource tools.

## University of Mumbai

### VISITING FACULTY

Taught Python programming language for the Algorithms subject to first semester Masters course students.

Mumbai, India

since Dec 2017

## Homi Bhabha Center for Science Education(HBCSE), Tata Institute of Fundamental Research(TIFR)

### INTERN

Worked at Gnowledge lab, for migrating an existing opensource project, gStudio (Django/Python based) to a Neo4j based platform. Work mainly involved exploration of graphical databases and how graph based computation can be considered as an alternative to traditional computing approach.

Dec 2016 - Apr 2017

## Bhabha Atomic Research Center

### IMPLANT TRAINEE

Worked on development of an acoustic sensor circuit with an signal amplifier which could be useful for identifying the micro vibrations and micro cracks for safety purposes.

May 2012 - June 2012

Mumbai, India

## Professional Membership

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### Life Member

INDIAN MATHEMATICAL SOCIETY

## Invited Talks and Teaching

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- Taught Algorithms and Python Programming to first year MSc Computer Science students at Department of Computer Science, University of Mumbai.
- Conducted one day session at S. P. K. college, Sawantwadi on Algorithms and Introduction to Programming using Python.
- Digital literacy and usage Free and Open Source softwares at M-Power Center for mixed age group learners.
- One day session on introduction to fundamentals of Graphical Databases and Neo4j to MSc students at Department of Computer Science, University of Mumbai

## Courses Developed

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### For Teachers On TISSx (TISSx Link)

- TOL01 - Technologies for Online Learning (Content and Analytics)
- S02 - Reflective Mathematics teaching using ICT (Content)
- C02 - Construtive Teaching and Learning using ICT (Analytics)

### For Students on CLIXplatform (CLIX Platform Link)

- Linear Equations (Content, management, and JavaScript tools development)
- Proportional Reasoning (Content authoring)
- Geometric Reasoning (Content authoring)

## Research Publications

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### Journal Publications

- Charania A, Bakshani U, Paltiwale S, et al (2021). Constructivist teaching and learning with technologies in the COVID-19 lockdown in Eastern India. British Journal of Educational Technology.

### Conference Proceedings

- Paltiwale, S. et al. (2021, October). Understanding the teacher participation and interaction over technology-enabled CoP, In SITE Online Interactive Conference 2021.
- Paltiwale, S. et al. (2020, January). Use of Community of Practice for In-Service Government Teachers in Professional Development. In Open Conference on Computers in Education (pp. 73-77). Springer, Cham.

## Conference Abstracts and presentations

- Charania, A., Kaur, I., Paltiwale, S., Sarkar, D., (2020). Preliminary learning and teaching outcomes of project-based learning with ICT. OCCE, India
- Dhakulkar A., Paltiwale S.(2019) *raikhik samikaran ke adhigam ke liye sanvadatmak aur sahyogi vatavaran ka nirmaan* (in Hindi), Central Intitue of Education, Delhi University
- Dhakulkar A., Paltiwale S.(2018). Designing An Interactive And Collaborative Environment For Learning Linear Equations, CLlx Symposium 2018, Tata Institute of Social Sciences, Mumbai. (Poster)
- Salgaonkar A., Paltiwale S. (2016). Neo4j: Entities and Relations are modelled as they are. Confluence of Emerging Trends in Multidisciplinary Research Areas to Mathematics (CETMRAM-2016), Mumbai.

## Projects

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### Supported by Tata Trusts

#### INTERGRATED APPROACH TO TECHNOLOGY IN EDUCATION (ITE)

- ITE is a pedagogical framework to improve teaching and learning processes, and foster 21st century skills and authentic, project-based learning for older children and adolescents in some of the most underprivileged geographies. ITE has been implemented in 12, mostly-rural locations in eastern and northern India. Students, most of them first-time computer users, deepen their learning of content by creating learning artefacts like weather charts, graphs representing jute production in India, or population-density charts in different cities. These projects are carefully selected to match the school curriculum and the lessons taught in class.

### Digital Badges for TPD in India Project

#### COLLABORATIVE INITIATIVE BETWEEN TISS AND OPEN UNIVERSITY UK

- exchange initiative is led by the Open University, UK working with partners at TISS, India.
- It seeks to explore the range of ways that digital badge technology could be used to support effective teaching practice in low- to medium-income teacher education by providing insight into the value and motivations that can be built around digital badges and the enablers and challenges to their use.

### RTICT (Reflective Teaching in ICT)

#### GUIDED BY DR RUCHI KUMAR, ASSISTANT PROFESSOR, TISS

- Involved in planning workshops for teachers and guiding them toward usage of ICT in their curriculum and practices.

### LE tools

#### GUIDED BY DR AMIT DHAKULKAR, POSTDOCTORAL FELLOW, UNESCO CHAIR FOR MULTIMODAL LEARNING AND OPEN EDUCATIONAL RESOURCES, NORTH WEST UNIVERSITY, SOUTH AFRICA

- Browser based JavaScript interactives developed for Linear Equations module for CLlx.
- These tools were developed as a scaffold to create numerical puzzles for learners as well as for collection of data as per the research objectives and questions.

### LO Map

#### GUIDED BY PROF AMBUJA SALGAONKAR, HOD, DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF MUMBAI AND PROF G NAGARJUNA, HBCSE-TIFR

- As part of internship during MSc, built using VivaGraphJS and Neo4j as backend.
- Provides interface for making nodes and adding their lineage
- The tool was aimed as developing concept maps as an attempt of using graphical database for Atlas of Knowledge project at the Homi Bhabha Center for Science Education
- please refer to <https://github.com/sumeghhp/LOMap>

### Low cost IR Spectrometer

- A low cost IR oilspectrometer for analysis of oil samples for BE project
- The spectrometer used a commonly available web-camera to capture the input with some physical modifications of its sensors
- The processing of the image caputed for development of histogram was programmed using MATLAB.

### Acoustic sensor

#### GUIDED BY MR S SHETTY, SCIENTIFIC OFFICER, CNID, BHABHA ATOMIC RESEARCH CENTER

- Study and design of Acoustic sensors as part of implant training in Bhabha Atomic Research Center
- The sensor has been successfully tested for detection of minor vibrations and amplifying it for detection of damage or cracks.

## Certifications

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### Research Trends in Machine Learning and IoT (RTMI-2021)Crash Course on Python - 2021

#### MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY ALLAHABAD

- Short Term Course (one-week) on Research Trends in ML and IoT (in online mode)

### Crash Course on Python - 2021

#### GOOGLE (COURSERA)

- A crash-course on Python Programming Language (Certificate link)

## Computer Programming for Everyone - 2021

MOOC OFFERED BY INSTITUTE OF CODING, UNIVERSITY OF LEEDS

- On this course, learners discovered how and why people program computers, the kinds of problems computers can solve, explored the different types of coding language and implemented the key principles learnt in their coding project.

## Geospatial Information Technology (GIT) in Fragile Contexts - 2021

MOOC OFFERED BY UNITAR (UNITED NATIONS INSTITUTE FOR TRAINING AND RESEARCH)

- The course was developed by Operational Satellite Applications Programme (UNOSAT) of the United Nations Institute for training and Research (UNITAR) as part of the Earth Observation for Sustainable Development: Fragility, Conflict and Security project funded by the European Space Agency.
- It aimed to give a short but practical introduction to GIT in states affected by fragility, with a focus on remote sensing.

## Blockchain Basics - 2020

MOOC OFFERED BY UNIVERSITY AT BUFFALO (COURSERA)

- course intended to help recognize foundational concepts of blockchain, and apply these program concepts on the blockchain. (Certificate link)

## Skills

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Constantly try to learn various technologies and get familiar with various Open-source tools and their usage. Like to explore various paradigms of programming and different types of databases. Listed few:

<b>Languages</b>	Python, LISP, JavaScript, HTML, CSS, SQL
<b>Databases</b>	Neo4j (Graphical), MySQL (Relational), MongoDB (document-oriented)
<b>Data Analysis</b>	SPSS, R, Tableau, Power BI
<b>Familiar Technologies</b>	JSON, RDF, OWL, Git, Blockchain
<b>CMS/LMS</b>	edX, gStudio (GNOWSYS Studio), Wordpress, Moodle
<b>Graphic Designing</b>	Inkscape, GIMP

## Language Proficiency

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- English - Fluent
- Hindi - Fluent
- Marathi - Fluent