Specialization in

Advanced Urban Analytics

Dive into the Future of Data-Driven Geospatial Insights to Build Smarter, Sustainable Cities

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@ L.A.B.S is your Launchpad to lead the future of Design and Technology

We are an Action Oriented Lab for Advancements in Design & Technology

Ideas Powered by technology | Design meets Data | Global Mentors

Real World Projects | Industry Ready learning | Tech Driven Workflows

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COURSE DESCRIPTION

WHAT IS ADVANCED URBAN ANALYTICS PROGRAM BY @L.A.B.S. ?

Unlock the Power of Geospatial Analytics

Explore advanced tools like GIS, satellite imagery, and spatial data to revolutionize urban planning and infrastructure development

Lead with Data-Driven Urban Strategies

This course empowers professionals to harness data-driven insights for sustainable, efficient, and forward-thinking city planning

Design Resilient, Future-Ready Cities

Optimize urban systems by integrating geospatial data into decision-making, improving resource management, and enhancing resilience to climate challenges

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FEATURES

DISCOVER

6+ SOFTWARES

15+ PLUGINS

3+ CODE PLATFORMS

3+ AI MODELS

DEVELOP

Seamless AI Workflow Integration

Dashboard Design And Development

Python For Advanced Analytics

Pitching Techniques Urban Proposals

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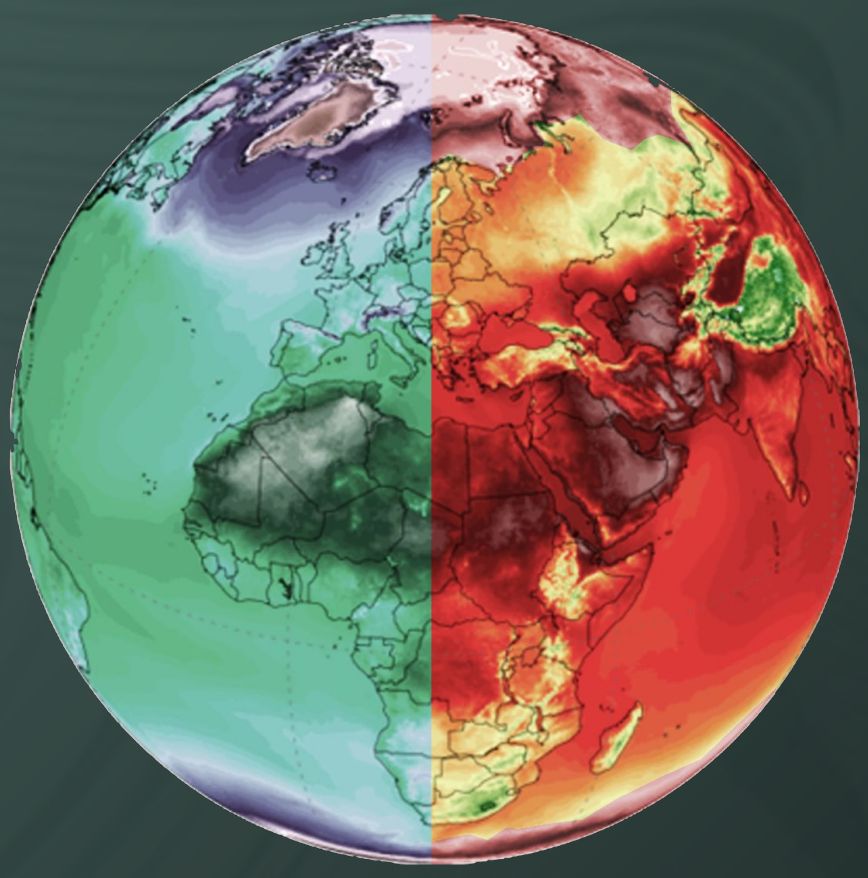
INDUSTRY

DATA
ANALYTICS
EXPERTISE

INTEGRATION
OF ADVANCED
AI TOOLS



RISING URBAN
COMPLEXITIES

REQUIRED
INFORMED
DECISION
MAKING

Fuel Your Career with In-Demand Skills in Geospatial and Data-Driven Urban Planning

GAIN COMPETITIVE ADVANTAGE

With

Data analytics & Artificial Intelligence

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CAREER

DRIVE IMPACT

CREATE

Data Driven Strategies

CURATE

Geospatial Insights for Smarter Decisions

CULTIVATE

Sustainable Urban Growth and Resilience

FIRMS

Systematica · ATKINS · AIUA · giz · RMI · esri · THE WORLD BANK · MOTT MACDONALD

PROFESSIONAL ROLES

- Geospatial Data Scientist
- Urban Policy Analyst
- Urban Systems Modeler
- Urban Data Analyst
- Data Visualization Specialist
- AI Planning Consultant

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FRAMEWORK

Learn From the Global Experts
Experts from multidisciplinary fields

Practical Skills Development
Industry - Aligned Applications

Career Guidance
Customized Career Development Plans

PEDAGOGY

- **LIVE CLASSES :** All classes are conducted live
- **FREQUENCY :** 2 classes per week, Each class is 3 hrs
- **STRUCTURE :** Organized into 4 modules - Beginner to Advanced
- **SUPPORT :** Each module includes support and query sessions
- **TOTAL DURATION :** 50+ hrs over 10 Weeks

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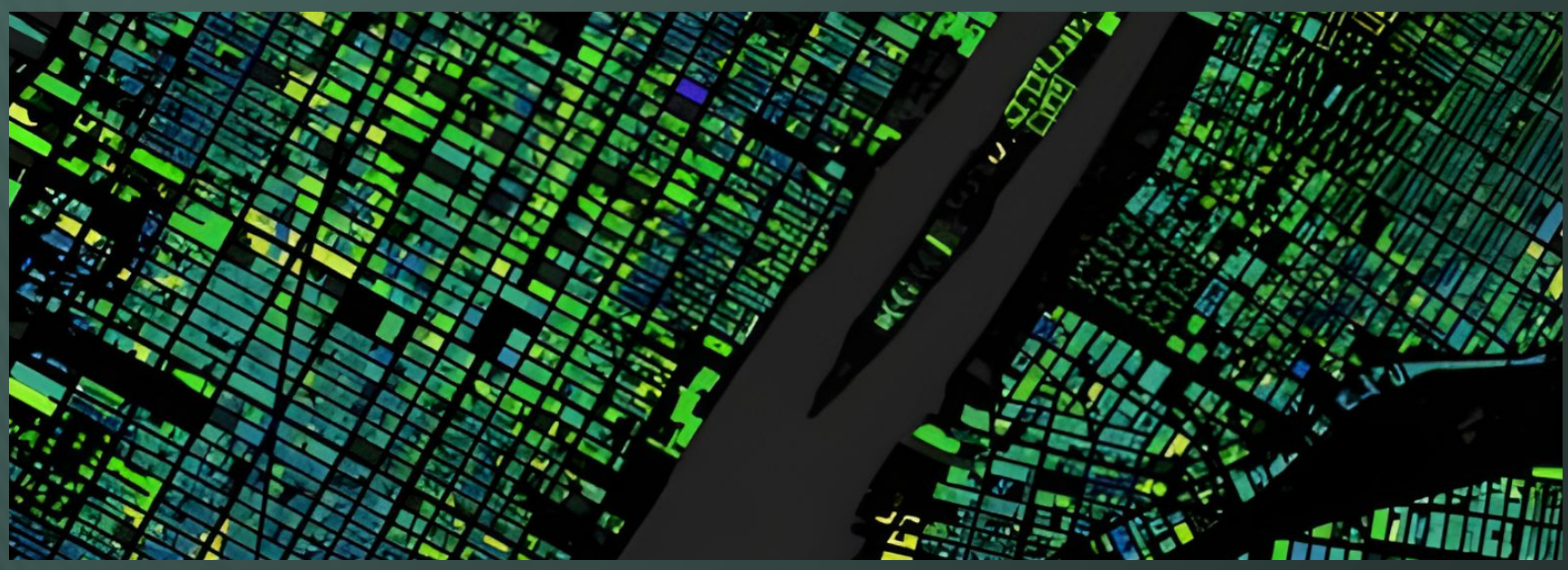
CURRICULUM

LEARN - Foundation

Build a strong foundation in big data, geospatial systems & visual mapping



Introduction to Big Data

- ❏ **DEFINITION & PRINCIPLES** : Definition, Principles, and Evolution
- ❏ **APPLICATIONS** : Applications across different Industries

Big Data & Urbanism

- ❏ **URBAN APPLICATIONS** : Big data applications in urbanism
- ❏ **TIMELINE** : Methods from historic to modern geospatial techniques
- ❏ **SMART CITIES** : Big data utilization in the development of smart cities

Open Data Repositories & Frameworks

- ❏ **DATA SOURCES** : Identifying sources for Open geospatial datasets
- ❏ **DATA COLLECTION** : Techniques for collection from various platforms
- ❏ **DATA FORMATS** : Understanding data formats & structures
- ❏ **DATA BUILDING** : Building shapefiles from scratch & Creating data

Mapping and Geospatial Data Representation

- ❏ **MAPPING THEORY** : Theory of mapping and its role in spatial analysis
- ❏ **FORMAT EXPLORATION** : Exploring various forms of geospatial data
- ❏ **FEATURE TYPES** : Presentation & application of point, line & polygon data
- ❏ **VECTORS** : Visualization Techniques for representing geospatial data

QGIS | Google Earth Engine | OSM (OpenStreetMap) | Excel | QuickOSM

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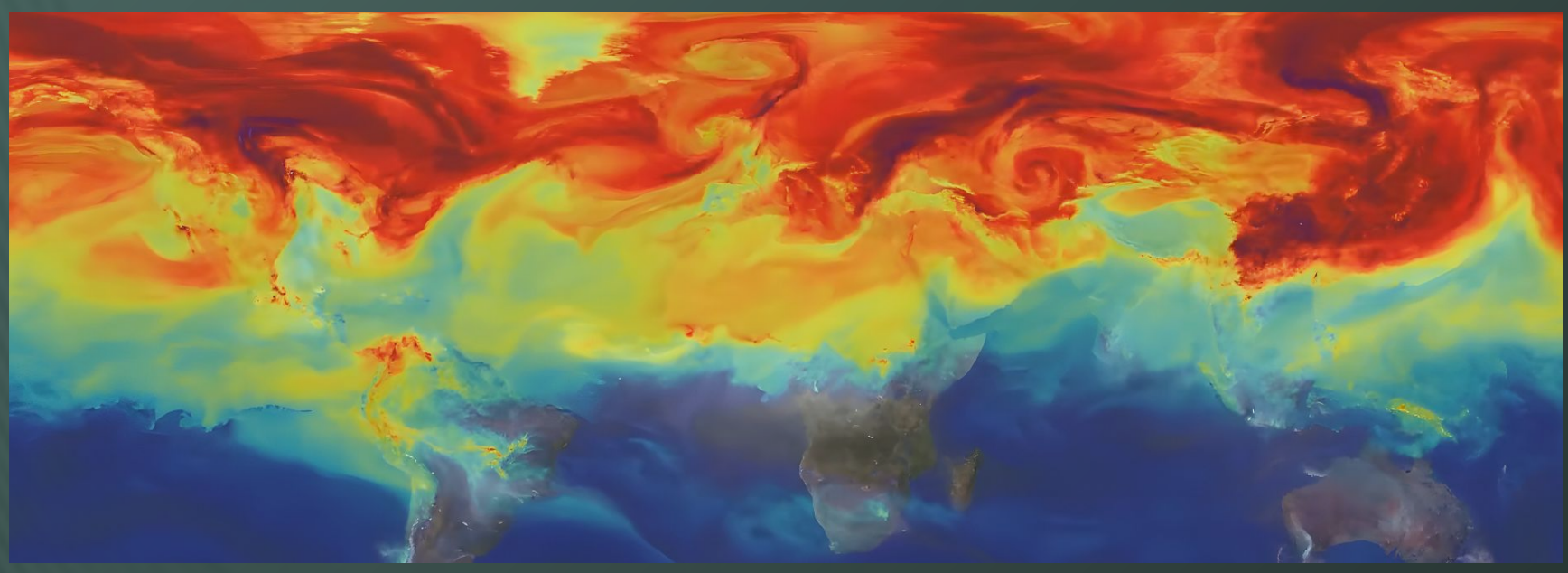
CURRICULUM

APPLY - Intermediate

Apply geospatial knowledge through GIS tools and real-world workflows



Geospatial Data Processing with GIS

- ❏ **IMPORT** : Importing various data types into QGIS (vector, raster, etc.)
- ❏ **INTERPRETATION** : Reading different types of geospatial data
- ❏ **SYSTEMS** : Understanding coordinate systems and projections in GIS
- ❏ **COMPARISON** : Overlaying multiple geospatial datasets for analysis

Data Transformation & Conversion

- ❏ **VALUE TYPES** : Types (qualitative, quantitative, continuous, discrete)
- ❏ **CONVERSION** : Conversion methods for data types
- ❏ **DATA CLEANING** : Dealing with NULL or no data values
- ❏ **SPATIAL SQL** : Data Manipulation, Querying, Filtering, streamlining

Real World Project Setup

- ❏ **SDG CONTEXT** : Project theme emphasizing on SDG goals by the UN
- ❏ **PLUGINS** : processing Plugin (QuickOSM, Travel Time, QNET)
- ❏ **ADVANCED ANALYTICS** : Network Analysis, Spatial Interpolation, Hotspot Analysis, Accessibility Analysis, Hydrological Modeling

Solutions and Strategic Outcomes

- ❏ **POLICIES** : Streamline design by aligning with Government policies
- ❏ **STRATEGY** : project strategy based on analyzed data & regulations
- ❏ **COMMUNICATION** : non-spatial representations & Graphs for feedback

QGIS | QuickOSM | TravelTime Plugin | QNET | SQL | OpenStreetMap (OSM) Network & Accessibility Analysis

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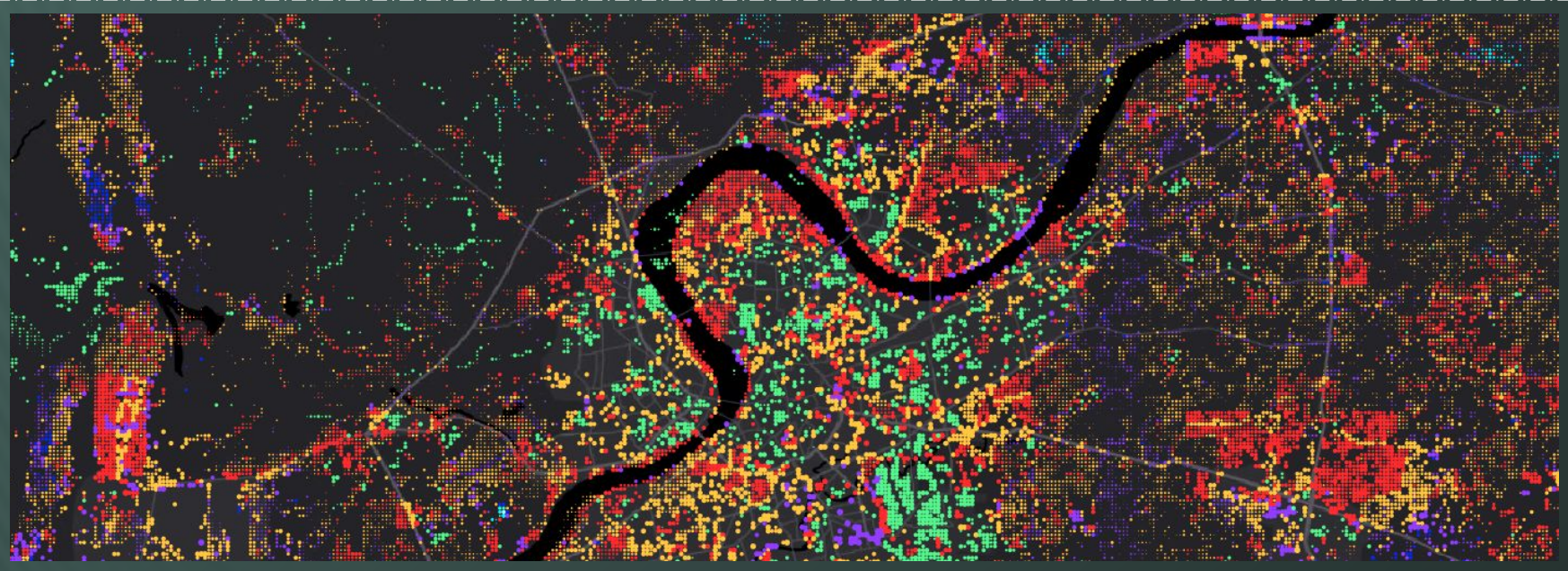
CURRICULUM

BUILD - Advance

Leverage Python to analyze, visualize, and apply geospatial intelligence at scale.



Introduction to Python

- ❏ **DATA SCRIPTING** : Scripting to collect data from satellite imagery, APIs
- ❏ **WEB SCRAPING** : Data Scraping with Python using Scrapy
- ❏ **JAVASCRIPT** : Google Earth Engine for large-scale geospatial analysis

Data Visualization with Python

- ❏ **MANIPULATION** : Clean datasets for analysis using pandas
- ❏ **LIBRARIES** : Employ geopandas & libraries for transforming & handling
- ❏ **CHARTING** : Visualizations with matplotlib & seaborn for presentations

Spatial Analysis with Python

- ❏ **SPATIAL JOINS** : Perform spatial joins to combine datasets
- ❏ **PROXIMITY** : Conduct proximity and distance analysis with scipy.spatial
- ❏ **INTERACTIVE MAPPING** : Visualize trends with folium, matplotlib, & plotly

Advanced Applications and Case Studies

- ❏ **CHANGE DETECTION** : Analyze urban & land-use changes with Rasterio
- ❏ **LOGISTICS** : case studies in logistics & planning for optimized routing
- ❏ **INSIGHTS** : Advanced techniques for practical data-driven insights

Python | Pandas | Geopandas | Scrapy | Matplotlib | Seaborn | Plotly
Folium | Rasterio | Scipy | JavaScript | Jupyter Notebooks

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SCALE - Expert

Use AI to decode patterns, build urban dashboards, & pitch data-driven urban strategies.

Exploring AI in Geospatial Analysis

- ❏ **SAM :** (Segment Anything Model) for satellite & street-level imagery
- ❏ **SEGMENTATION** : Leverage AI to segment spatial features of land uses
- ❏ **AI-DRIVEN STRATEGIES** : for a more comprehensive geospatial analysis

Leveraging AI to Identify Patterns and Behavior

- ❏ **CLUSTERING** : K-means & hierarchical clustering to identify patterns
- ❏ **ITERATIONS** : Test AI models, iterate & interpret to refine approaches
- ❏ **DECISIONS** : Leverage clustering results to inform decision-making

App Development: Decision-Making & Participatory

- ❏ **DASHBOARD** : Dashboard development for project visualization
- ❏ **REPRESENTATION** : Tableau for publishing & sharing your project
- ❏ **PUBLISHING** : designing interactive & informative dashboards

Pitching and Implementing Urban Proposals

- ❏ **PITCH DECK** : Learn pitching techniques for presenting Urban projects
- ❏ **BUSINESS** : Successful case studies of big data applications
- ❏ **NETWORK** : with industry experts to enhance collaboration opportunities

Segment Anything Model (SAM) | Scikit-learn | Tableau | K-means
Hierarchical Clustering | OpenCV | Satellite Imagery APIs

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@ LABS Personalized Learning

The @LABS Personalized Learning Track is a 2-week add-on offering 1-on-1 mentorship with a global expert to work on a project or skill of your choice

PERSONALIZED TRACK FLOW

Define Path

Select your focus area
Match with a mentor and set clear goals

Build & Refine

Attend mentor-led working sessions
Submit final work and receive expert feedback

CUSTOM LEARNING, REAL IMPACT

- **PERSONALIZED LEARNING :** Focused growth in your area of interest
- **EXPERT GUIDANCE :** Expert feedback tailored to your goals
- **STRONG PORTFOLIO :** Portfolio-quality output with mentor backing
- **REAL EXPOSURE :** Exclusive networking & publishing opportunities

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CAREER SUPPORT

@ LABS Career Support & Networking

Helping learners and professionals explore curated, Career paths, Access mentorship, and Build Global networks

whether you're

Emerging Professional | Upskilling | Shifting Domains

HIGHLIGHTS

Career Consultations
Personalized guidance on your goals, strengths, and roadmap

Application Support
Expert reviews for your CV, SoP, portfolio, & LinkedIn

Global Connect Network
Curated Introductions to firms, labs, and institutions worldwide

Masterclasses & Panels
Live sessions with global experts in AI, urbanism, design, and more

Global Program Guidance
Support for applying to master's, fellowships, or PhDs

Career Clarity | Global Exposure | Personal Branding

Lifelong Access | Expert Guidance | Curated Connections

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You don't need to be enrolled in a course to participate, This program is open to all

MENTORS

Maria Augusta Kroetz

Mobility Planner

Urban AI Specialist

Systematica

Pushkar Runwal

Teaching Associate

Urban Technology Consultant

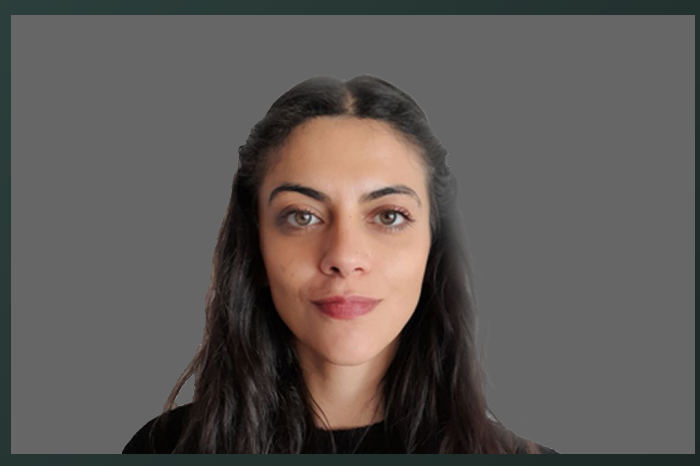
THE URBAN LAB

Kriti Nirmal

Urban Policy Analyst

Digital Governance Specialist

GOVERNMENT OF GUJARAT



Julia Veiga

Generative Design Specialist

Urban Designer

EXTERNAL REFERENCE

Disha Shetty

Environmental Analyst

Building Performance Analyst

Zaha Hadid Architects

Federico Caldi

Digital Fabrication Specialist

Immersive reality Specialist

IAAC

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MENTORS

Aishwarya Arun

Computational Designer

Tech Developer

snaptrude

Vasudha karnani

Architectural Technologist

AI Optimization Specialist

M:OFA

Victor Suarez

Founder - Venus AI

AI Researcher & Developer

IAAC

Mira Housen

AI Specialist

Algorithmic Design Consultant

ATOPOS

Yohan Wadia

Geospatial Analyst

Urban Planner

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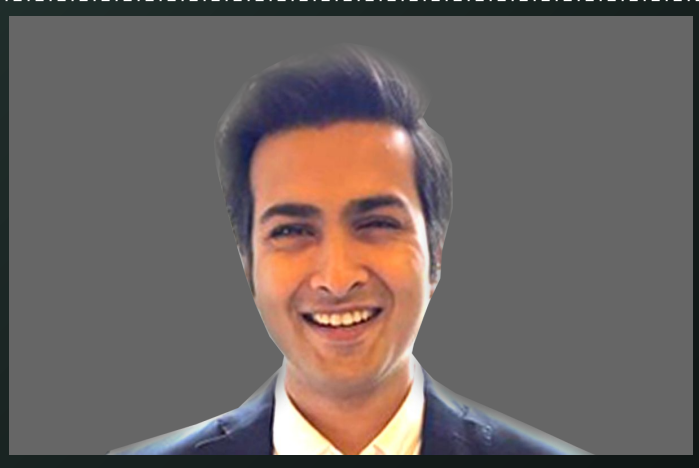

Parshav Sheth

Big data Analyst

Academician

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TESTIMONIALS

Vishal Shah

Founder & Principal Architect
Aangan Collaborative LLP

The 'Climate AI' workshop by @L.A.B.S. was an eye-opener on how technology and sustainability intersect. The hands-on approach made complex topics easy to grasp, and the collaborative environment sparked great discussions. If you're serious about using AI for urbanism, joining @L.A.B.S. will be a game changer!

Anushka Shetty

Final Year Student - Balwant Sheth School of Architecture, Mumbai

My experience with the urban design module at @L.A.B.S. has been incredibly rewarding! Exploring innovative software for data-driven design was both enjoyable and engaging. I enhanced my design skills and learned to represent data in eye-catching ways. Mastering these tools will benefit my future projects and seamlessly integrate data analysis into my designs. Overall, this journey at @L.A.B.S. reignited my passion for creative and analytical design strategies!

Mehar Kalra

Project Engineer - CEPT Research & Development Foundation

Engaging with @L.A.B.S. has been a true technological awakening. Their insights into how AI and Big Data are revolutionizing urban planning revealed the potential for smarter, data-driven decision-making. I learned about practical applications and scaling these technologies to address real-world urban challenges. This experience deepened my appreciation for the vital role technology plays in shaping adaptive, future-ready cities!

Manmath Dhongle

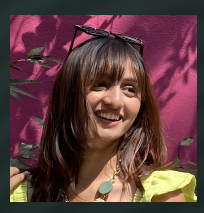
Master Student - D.Y.Patil School, School of Architecture, Navi Mumbai

I had a fantastic time at the workshop at DY Patil School of Architecture with @L.A.B.S., where I discovered how AI can transform our understanding of urban environments! I didn't just work with AI; I lived it! We explored how AI breaks down different parts of a city into colorful sections, making analysis fun and easy. The AI-generated visuals really brought the layout to life. Overall, it was an enlightening experience, and I loved the insights shared during the session!

Akshat Agarwal

Final Year Student - Balwant Sheth School of Architecture, Mumbai

I learned more in three months than in my entire four years of bachelor's! Attending the course at @L.A.B.S. was incredibly enriching. From extracting data with Google Maps and Google Earth Engine to mastering data representation, every moment was packed with knowledge. The highlight was critically examining how data is represented, allowing me to create various maps and determine which ones work best for different data types. I highly recommend this course to anyone interested in advanced urbanism!



Dhruvi Rathod

Master Student - IDPT SCET School of Architecture, Surat

I want to express my heartfelt gratitude for the fantastic workshop on AI workflows for architects at @L.A.B.S.! The sessions on AI models and their practical applications were enlightening and fun. The hands-on activities sparked my creativity and provided valuable insights that will elevate my future projects. Thank you for such an amazing experience that turned complex concepts into exciting possibilities!

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THROUGH REAL-WORLD EDUCATION

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