

# Venkanna Babu Guthula

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## SUMMARY

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I am a Ph.D. student specialising in machine learning for Earth observation, with three years of industry and research experience in the fields of geospatial data analysis and machine learning. I am passionate about leveraging artificial intelligence and high-performance computing to extract meaningful insights from geospatial data at scale, driving innovation in risk assessment, environmental monitoring, and beyond.

## EDUCATION

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- Ph.D. in Machine Learning for Earth Observation** 02/2023-Present  
Department of Computer Science, University of Copenhagen, Denmark
- Conducting research on malaria risk assessment in African cities using remote sensing and machine learning
  - Developing computer vision methods using Convolutional Neural Networks and Vision Transformers for semantic and instance segmentation
  - Focusing on methods for segmenting individual buildings, classifying their attributes, and aligning different image modalities

- M.Sc. in Geo-Information Science & Earth Observation** 09/2018-06/2020  
Faculty of Geo-Information Science and Earth Observation, University of Twente, the Netherlands
- Thesis:** Automatic road extraction from high-resolution remote sensing imagery using fully convolutional networks and transfer learning
  - Studied basic concepts in machine learning and remote sensing
  - Started exploring machine learning frameworks such as Scikit-learn, Pytorch and TensorFlow
  - Gained hands-on experience in geospatial data analysis using Python, JavaScript, R, and GIS software (QGIS, ArcGIS, and SNAP)

- B.Tech. in Geo-Informatics** 09/2014-03/2017  
Andhra University, Visakhapatnam, India
- Thesis:** Web-GIS-based comparative analysis of rainfall in the Thatipudi Reservoir catchment area and its impact on reservoir capacity
  - Studied techniques for estimating rainfall and water surface area using remote sensing imagery
  - Developed a web-based application for geospatial data visualization

## EXPERIENCE

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- Scientist I - EO** 12/2021-01/2023  
CropIn Technology Solutions, Bangalore, India.
- Developed a scalable model for cloud and shadow detection in Sentinel-2 imagery using classical machine learning algorithms
  - Utilized AWS services for data analysis and machine learning model development
  - Applied deep learning techniques for land boundary delineation from high-resolution satellite imagery

## **GIS-Python Developer**

Wildlife Institute of India, Dehradun, India

09/2020-12/2021

- Developed deep learning models for species classification on top of MegaDetector to classify Indian mammals (<https://github.com/bhlab/SpSeg>)
- Maintained and contributed to *Linkage Mapper*, a tool for mapping wildlife corridors (<https://github.com/linkagescape/linkage-mapper>)
- Performed remote sensing image classification using machine learning algorithms in Google Earth Engine

## **Map-Technician**

09/2017-09/2018

Mapbox Technologies, Bangalore, India

- Researched and designed workflows to improve transportation assets for enhanced navigation experiences
- Planned and organized field mapping events for large-scale geospatial data collection
- Added, validated, and enhanced base data in OpenStreetMap using GPS, remote sensing imagery, and street-level imagery

## **ACHIEVEMENTS**

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2020 Awarded the Golden Jubilee Scholarship at the Indian Institute of Remote Sensing for outstanding performance in M.Sc.

2019 Received a scholarship to attend and present a lightning talk at the *State of the Map Asia 2019* Conference, Dhaka, Bangladesh

## **LANGUAGES**

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Telugu, English and Hindi

## **SELECTED JOURNAL PAPERS**

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Brandt, M., Gominski, D., Reiner, F., Kariyaa, A., **Guthula**, V. B., Ciais, P., Tong, X., Zhang, W., Govindarajulu, D., Ortiz-Gonzalo, D., et al. (2024). Severe decline in large farm-land trees in india over the past decade. *Nature Sustainability*, 1–9.

**Guthula**, V. B., Oehmcke, S., Chilaule, R., Zhang, H., Lang, N., Kariyaa, A., Mottelson, J., & Igel, C. (2025). Drone imagery for roof detection, classification, and segmentation to support mosquito-borne disease risk assessment: The nacala-roof-material dataset. *Science of Remote Sensing*, 12, 100306.

**Guthula**, V. B., Shrotriya, S., Nigam, P., Goyal, S. P., Mohan, D., & Habib, B. (2022). Biodiversity significance of small habitat patches: More than half of indian bird species are in academic campuses. *Landscape and Urban Planning*, 228, 104552.

## **SELECTED CONFERENCE PAPERS**

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**Guthula**, V. B., Kehlet, J. J. Å., Kariyaa, A., Lang, N., Oehmcke, S., & Igel, C. (2025). Beyond building footprints: Probing dinov3 to map roof material and geometry. *1st Workshop on Advances in Representation Learning for Earth Observation (REO @ EuriPS 2025)*.

**Guthula**, V. B., Pankajakshan, P., John, E., & Aravind, S. (2023). Cirrus cloud and shadow masking in optical satellite using deep learning for small land holding farmer plots. *IEEE International Geoscience and Remote Sensing Symposium*, 6354–6357.