



Internship: Building footprint detection in satellite imagery using deep learning and image segmentation

Welcome to ICube,

Created in 2013, the laboratory brings together researchers from the [University of Strasbourg](#), the [CNRS](#) (French National Center for Scientific Research), the [ENGEES](#) and [INSA](#) of Strasbourg in the fields of engineering and computer science, with imaging as the unifying theme.

With around 650 members, [ICube](#) is a major driving force for research in Strasbourg whose main areas of application are biomedical engineering and sustainable development.

[SERTIT](#), a service platform of ICube, known for its ISO certified rapid mapping service, is seeking to accelerate its mapping activities through artificial intelligence. This service assists in post-crisis emergency management (e.g. ground rescue, reconstruction efforts ...).

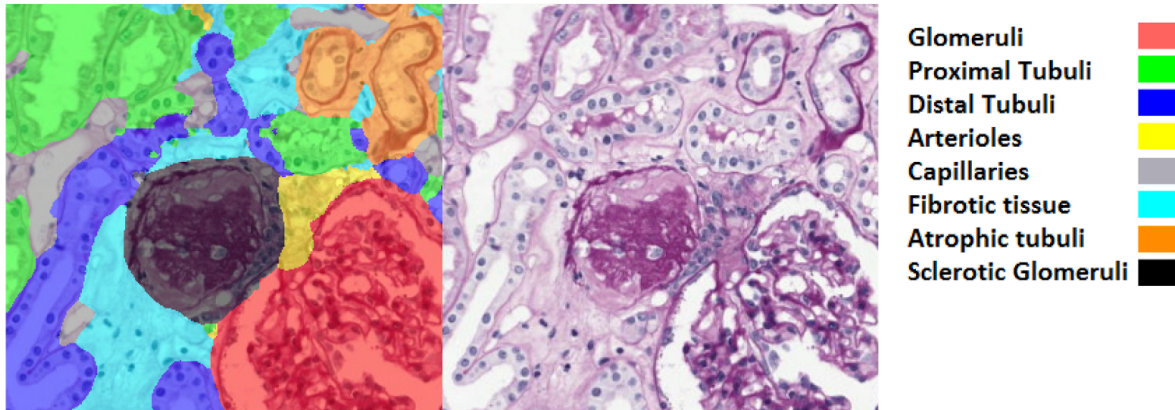
You will join a transversal team of researchers, software engineers and geomatics specialists from SERTIT (*Regional service for remote sensing and image processing*), [SDC](#) (*Data science and knowledge*), [IMAGeS](#) (*Images, learning, geometry and statistics*), working on automatic feature extraction from satellite imagery.

Organized horizontally, ICube operates with a people centric approach, which fosters a friendly community and culture. Join us to be part of our mission to put satellite imagery in service of those in need.

Mission

- Users need to map buildings during rapid mapping after a disaster strikes
- Collaborate with research teams to transfer techniques from medical imaging to remote sensing
- Develop new innovative solutions to automatically extract building footprints using:
 - Deep Learning
 - Object based segmentation algorithms

- o A combination of the above



Input image



Prediction

Role

- Build a pipeline for training deep learning models on our unique imagery
- Build object based segmentation algorithms for satellite image processing
- Integrate deep learning models with object based segmentation algorithms for feature extraction from imagery
- Implement efficient solutions for processing raster and vector geographic data
- Participate in a research and development team

Skills

Must have :

- Experience with the Python scientific computing ecosystem (Pandas, numpy, scikit-learn, scikit-image, etc.)

- Knowledge of Machine Learning workflows and techniques (e.g. best practices around training data management, understand basics of numerical optimization)
- Familiarity with Linux environments
- Have excellent communication skills and a strong team player
- Good knowledge of English, French is not mandatory
- Can-do attitude!

Nice to have or interested in learning:

- Experience with GIS software and packages like ArcGIS, QGIS, GDAL or PostGIS
- Experience with a deep learning framework (Tensorflow, PyTorch, Caffe, Theano, Keras)
- Experience with remote sensing and/or geographic raster/vector data

Profile

- Undergraduate student of a computer science/geomatics degree or similar

Benefits

- Salary: 550 € / month
- In some cases travel expenses (to/from Strasbourg) can be provided
- Access to a state-of-the-art high performance GPU cluster
- Learn cutting edge deep learning research and apply those techniques to real world challenges

Some press about us:

["Presentation of the ICube laboratory"](#) (Youtube video)

[Who is SERTIT ?](#) (Youtube video)

Join Us:

To apply, send us an email to iadb@icube.unistra.fr (point of contact: Michal PARUSINSKI and Fahd BENATIA), be sure to include your C.V. and a cover letter to let us know why you think you would be a good fit.

DEADLINE FOR APPLICATION: 31/01/2019

STARTING DATE: To be discussed

LOCATION: Strasbourg, France

DURATION: 6 months