

CREATIVE DATA MINING

Mondays 10:00 – 12:00

052-0621-17L | 2 ECTS*

Creative Data Mining

The Creative data mining course aims to provide aspirants a hands-on experience on machine learning (ML) tools and techniques for data processing and analysis. Since future technologies increasingly rely upon the ML, urban systems and architecture shall adopt it and aspirant should learn creative ways to apply ML to better understand urban systems. The course covers a wider range ML techniques including supervised and unsupervised learning methods for data analysis and pattern recognition that help to better understand urban system for improving urban life.

All methods taught in the course will be applied to a common project to evaluate various dynamics of the urban environment. Students will work with time-series and geo-referenced data including temperature, relative humidity, illuminance, noise, people density, and dust particulate matter. Subjective impression survey data will also be integrated into the student projects to further explore influencing factors of the urban environment on our perceptual experiences. A selected neighborhood in the city of Zurich will be used as the case study and each student will present the findings of their research question in a final project.

Additionally, there are two of non-architectural skills the participants can develop during this course. First is an introduction to programming where at a minimum they can successfully copy and paste code-snippets to customize the computational tools presented in the course. Second, how clustering methods like PCA or K-Means could be applied in an architectural context.

Where

HIT H 31.4 (Video wall)

Supervision

Dr Varun Ojha

ojha@arch.ethz.ch

Danielle Griego

griego@arch.ethz.ch

Prof. Dr. Gerhard Schmitt
Chair of Information Architecture
Information Science Lab
Wolfgang-Pauli-Strasse 27, 8093 Zürich
www.ia.arch.ethz.ch

25.09.2017	Introduction to the knowledge discovery process
02.10.2017	Fundamentals of supervised machine learning
9.10.2017	Introduction to python & programming I
16.10.2017	Introduction to python & programming II Introduce final projects
23.10.2017	Seminar Week- No Lecture
30.10.2016	Supervised learning problem solving in python (MLP & SVM)
06.11.2016	Fundamentals of unsupervised learning (K-means, DBSCAN, PCA)
13.11.2017	Unsupervised learning problem solving in python
20.11.2017	Review data and examples for final projects
27.11.2017	Project proposal discussions
04.12.2017	Exploration of Real-World problems Q&A Workshop I
11.12.2017	Q&A Workshop II
18.12.2017	Final Critique

* Total 60 h = 2 ECTS

Presence and participation = 80%

The most recent outline will be found on www.ia.arch.ethz.ch