

**Week 1: Data Engineering**  
**Lecturer: Dr. Jonathan Fürst**  
 Campus ZHAW School of Engineering, Winterthur, Switzerland

	<b>Saturday June 29<sup>th</sup></b>	<b>Sunday June 30<sup>th</sup></b>	<b>Monday July 1<sup>st</sup></b>	<b>Tuesday July 2<sup>nd</sup></b>	<b>Wednesday July 3<sup>rd</sup></b>	<b>Thursday July 4<sup>th</sup></b>	<b>Friday July 5<sup>th</sup></b>	<b>Saturday July 6<sup>th</sup></b>	<b>Sunday July 7<sup>th</sup></b>
7:30 am - 9 am	Arrival of US- guests		Breakfast US- guests	Breakfast US- guests	Breakfast US- guests	Breakfast US- guests	Breakfast US- guests	<b>Weekend Excursion to Rhine Fall &amp; Alpstein Mountain Range</b>	Breakfast at Berggasthaus Ebenalp and Check-out
9 am - 12 pm			<b>Lecture:</b> - The Data Science-Process - Elements of Exploratory Data Analysis  <b>Lab:</b> - Development Environment  - The Python Data Science stack	<b>Lecture: Data            Curation</b> - Data Integration - Data Extraction and Exploration - Data Wrangling and Exploration - Record Linkage  <b>Lab:</b> - Data Extraction, Data Wrangling and Exploration	<b>Lecture: Pre-            processing            and Feature            Extraction</b> Unstructured Data - Text - Images  <b>Lab:</b> tbd	<b>Lecture: Data            Annotation            and Scaling</b> - Data Centric AI - Big Data  <b>Lab:</b> Data Annotation Parallel data processing with Dask	<b>Topical            excursion to            a company            (tbd)</b>	<b>Rhine Fall:</b> Boat trip Rhine Fall & Laufen Castle  Transfer by coach to Alpstein  <b>Alpstein            Mountain            Range:</b> Guided Tour "Wildkirchli / Äscher" (tbc)  Overnight stay at Berggasthaus Ebenalp (confirmed)	Short hike (tbc)  Coach transfer to Winterthur
12 pm			Lunch Mensa	Lunch Mensa	Lunch Mensa	Lunch Mensa	Lunch at the company or lunch packages		no lunch organized

1 - 5 pm		<b>Welcome Barbecue or another fun group activity</b>	<b>Data Science Project</b> Introduction and Selection of Project(s)  Project Work - Project Charta - Data Management - Exploratory Data Analysis	<b>Data Science Project</b> Project Work - Data Management - Data Report	<b>Data Science Project</b> - Project work in groups and individual supervision	<b>Data Science Project</b> - Project work in groups and individual supervision  Project checkpoint presentations and discussions.	4 pm: Frack Parade and night of technology at ZHAW SoE		Free time
6pm			Dinner for US guests, restaurant	Dinner for US guests, restaurant	Dinner for US guests, restaurant	Dinner for US guests, restaurant	Dinner at night if technology	Dinner at Berggasthaus Ebenalp	No organized dinner
Night	US- guests	Hostel Depot195	Hostel Depot195	Hostel Depot195	Hostel Depot195	Hostel Depot195	Hostel Depot195	Berggasthaus Ebenalp	Hostel Depot195

**Week 2: Machine Learning**  
**Lecturers: Dr. Manuel Dömer and Dr. Andreas Weiler**  
**Campus ZHAW School of Engineering, Winterthur, Switzerland**

Date Time	Monday July 8 <sup>th</sup>	Tuesday July 9 <sup>th</sup>	Wednesday July 10 <sup>th</sup>	Thursday July 11 <sup>th</sup>	Friday July 12 <sup>th</sup>	Saturday July 13 <sup>th</sup>	Sunday July 14 <sup>th</sup>
7:30 - 9 am	Breakfast for US- guests	Breakfast for US- guests	Breakfast for US- guests	Breakfast for US- guests	Breakfast for US-guests	US-guests: Check-out Hostel Depot 195, no breakfast organized  <b>Transfer to Allendale (MI), USA</b>	<b>Transfer to Allendale (MI), USA</b>
9 am - 12 pm	<b>Lecture:</b> Supervised Learning: - Regression - Classification - Evaluation  <b>Lab:</b> Supervised Learning using the Python Stack	<b>Lecture:</b> Unsupervised Learning - Clustering - Anomaly Detection - Evaluation  <b>Lab:</b> Unsupervised Learning using the Python Stack	<b>Lecture:</b> - association rules- recommender systems  <b>Lab:</b> - Recommender Systems using the Python Stack	<b>Data Science Project</b> - Project work in groups and individual supervision	<b>Excursion Berne</b>  Coach transfer to Bern  Guided tour of the Parliament Building (tbc)  Lunch at Rosengarten or Marzili (lunch- packages)  Free time in Berne city		
12 pm	Lunch Mensa	Lunch Mensa	Lunch Mensa	Lunch Mensa	Zytglogge Tour (1h)		
1 - 5 pm	<b>Data Science Project</b> - Project work in groups and individual supervision	<b>Data Science Project:</b> - Project work in groups and individual supervision	<b>Data Science Project</b> - Project work in groups and individual supervision	<b>Data Science Project</b> - Project presentations and discussions in front of a jury - evaluation - celebration and reception	Farewell Dinner (Tbc)  Coach transfer to Winterthur		

6pm	Dinner for US guests in a restaurant	Dinner for US guests in a restaurant	Dinner for US guests in a restaurant	Dinner for US guests in a restaurant	Farewell Dinner in Bern		
Night	Hostel Depot195	Hostel Depot195	Hostel Depot195	Hostel Depot195	Hostel Depot195		

**Week 3: Deep Learning**  
**Lecturer: Dr. Denton Bobeldyk**  
**Campus GVSU, Allendale, Michigan, USA, room: MAK B2235**

	Monday July 15 <sup>th</sup>	Tuesday July 16 <sup>th</sup>	Wednesday July 17 <sup>th</sup>	Thursday July 18 <sup>th</sup>	Friday July 19 <sup>th</sup>	Saturday July 20 <sup>th</sup>	Sunday July 21 <sup>st</sup>
7:30 – 9 am	Welcome breakfast Swiss guests, GVSU and ZHAW MAK D-2-227	Breakfast Swiss guests  MAK C-2-100	Breakfast Swiss guests  MAK C-2-100	Breakfast Swiss guests  MAK C-2-100	Breakfast Swiss guests before 7:30 hrs, MAK C-2-100	<b>Tour historic Fort Michilimackinac, and ferry to Mackinac Island</b>          Late afternoon: coach back to Allendale	<b>Free time:</b> relax or shopping.  In the afternoon, you may want to spend time on the <b>Grand Haven beach</b> with its amazing sunsets      Lunch and dinner on your own.  <b>Grand Haven Musical Fountain</b>
9 am - 12 pm	<b>Lecture:</b> - Convolutional Neural Networks - Deep learning evaluation methods  <b>Group Lab</b>	<b>Lecture:</b> - Deep learning dataset management and augmentation  <b>Group Lab</b>	<b>Lecture:</b> - Deep learning evaluation methods - Autoencoders & GANs  <b>Group Lab</b>	<b>Introduction to Group Deep Learning Project Lab</b> and presentation preparation	7:30 <b>Excursion to Sleeping Bear Dunes</b>  Hike dune climb and <u>trail and to Lake Michigan</u>		
12 pm lunch	Lunch cafeteria, MAK D-2-227	Lunch cafeteria, MAK D-2-227	Lunch cafeteria, MAK D-2-227	Lunch cafeteria, MAK D-2-227	Lunch and swimming on Lake Michigan		
	<b>Group Deep Learning Project</b>	<b>Group Deep Learning</b>	<b>Group Deep Learning</b>	<b>Group Deep Learning</b>			

1 – 5 pm	<b>Lab</b>  Morning Lecture Review Kahoot	<b>Project Lab</b>  Morning Lecture Review Kahoot	<b>Project Lab</b>  Morning Lecture Review Kahoot	<b>Project</b> Presentations and Discussions - Evaluation - Celebration	<b>Catamaran Ride:</b>  Enjoy the views of Traverse Bay relaxing on a large catamaran.   Coach to Mackinaw City, MI		
5:30 pm dinner	Dinner cafeteria, MAK D-2-227	Dinner cafeteria, MAK D-2-227	Dinner cafeteria, MAK D-2-227	Dinner cafeteria, MAK D-2-227	Overnight stay in hotel in Mackinaw City, MI	Dinner cafeteria, MAK D-2-227	No organized dinner
Night	GVSU Dormitory	GVSU Dormitory	GVSU Dormitory	GVSU Dormitory		GVSU Dormitory	GVSU Dormitory

**Week 4: Data Visualization**  
**Lecturer: Dr. Jonathan Leidig**  
**Campus GVSU, Allendale, Michigan, USA, room: MAK B2235**

Date Time	Monday July 22 <sup>nd</sup>	Tuesday July 23 <sup>rd</sup>	Wednesday July 24 <sup>th</sup>	Thursday July 25 <sup>th</sup>	Friday July 26 <sup>th</sup>	Saturday July 27 <sup>th</sup>
7:30 – 8 am	Breakfast Swiss guests MAK C-2-100	Breakfast Swiss guests MAK C-2-100	Breakfast Swiss guests MAK C-2-100	Breakfast Swiss guests MAK C-2-100	Breakfast Swiss guests MAK C-2-100	Breakfast at hostel
8 am – 12 pm	<b>Lecture:</b> - Intro to visualization - Design principles  <b>Exercises:</b> - Human cognition - UX concepts	<b>Lecture:</b> - Descriptive chart design - Persona & task modeling  <b>Exercises:</b> - Gestalt psychology - User/persona modeling - Task modeling	<b>Lecture:</b> - Multi-dimensional datasets - Overviews, navigation, and exploration with large datasets <b>Exercises:</b> - Group project	<b>Lecture:</b> - Tree, network, & spatial analysis - Persuasion  <b>Exercises:</b> - Group project	<b>Travel to Chicago</b>  Free sightseeing time.  e.g. See the city skyline from out in Lake Michigan: Shoreline boat tour, or from over 300 meters above the streets in the 94 <sup>th</sup> floor of the John Hancock Building.	<b>Free Time in Chicago and closure of summer school</b>  Transfer to Zürich  Or  Continue travelling in the US
12 pm Lunch	Lunch cafeteria, MAK D-2-227	Lunch cafeteria, MAK D-2-227	Lunch cafeteria, MAK D-2-227	Lunch cafeteria, MAK D-2-227		
1 – 5 pm	<b>Visual analytics projects:</b> - Exploratory data analysis lab with Tableau	<b>Visual analytics projects:</b> - Statistical charts lab with programming libraries	<b>Visual analytics projects:</b> - Visualization design with D3, Gephi, GIS, or Google Cloud Platform packages	<b>Visual analytics project:</b> - Project work in groups and individual supervision - Project presentations - Evaluation - Celebration		
5:30 pm Dinner	MAK D-2-227	MAK D-2-227	MAK D-2-227	Farewell Dinner, The Meadows Clubhouse	Free time in Chicago	

Night	GVSU Dormitory	GVSU Dormitory	GVSU Dormitory	GVSU Dormitory	Chicago Hostel- International	
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