

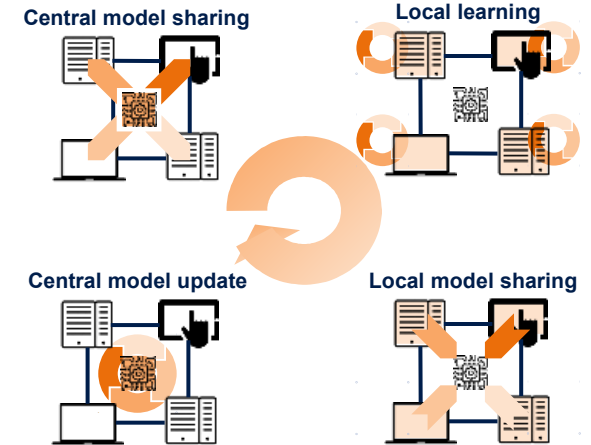
- Federated Learning - collaborative machine learning without centralized training data

Motivation and Goals

- » Financial institutions have a high demand for machine learning models to explore their customer specific data
- » It is not always feasible to build and maintain your own models:
 - › Much expertise is required
 - › The individual amount of data may be too small to develop and validate adequate machine learning models
 - › Customer data are highly sensitive and valuable to companies ⇒ companies are not willing to share
- » **Develop and validate** a model based on joined training sets
- » **Enable companies** to benefit from each other's data without revealing them to their competitors by training local models and combining them to a more accurate one

Work Packages

- » **Research:** recap machine learning basics (methods & techniques) and in-depths functionality of logistic regression, decision trees and neural networks, allocate the current research state on Federated Learning
- » **Implementation:** implement and train a model based on Federated Learning
- » **Validation:** measure model performance with adequate measures, enhance the model
- » **Visualisation:** visualize the model results, performances and individual prediction outcomes



Technical Specifications

Data Sources

- » Bank customer base data
- » Transaction data

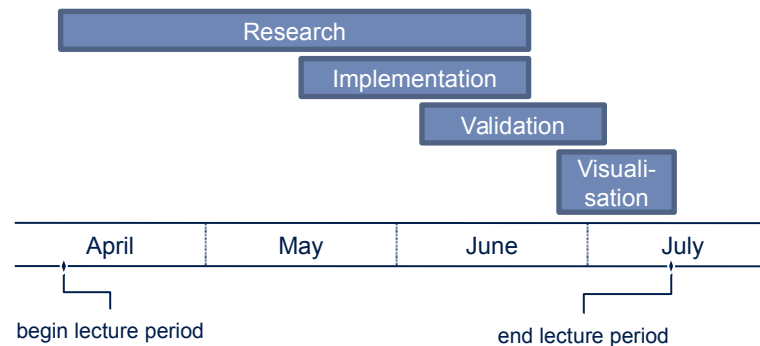
Algorithms/methods

- » Regressions, Decision Trees, Neural networks
- » Federated model averaging

Software/IT

- » Analytics: R / Python
- » Database: PostgreSQL
- » Frontend: R-Shiny

Project Timeline



Sponsor	d-fine GmbH Contact person: Markus Seifert
Scientific Lead	Todor Dobrikov
Project Lead	Dr. Ricardo Acevedo Cabra
Group Size	Five students
Project Time Frame	09.04.2018 – 14.07.2018

The project's outcome may be the basis for real implementations at d-fine's customers.