

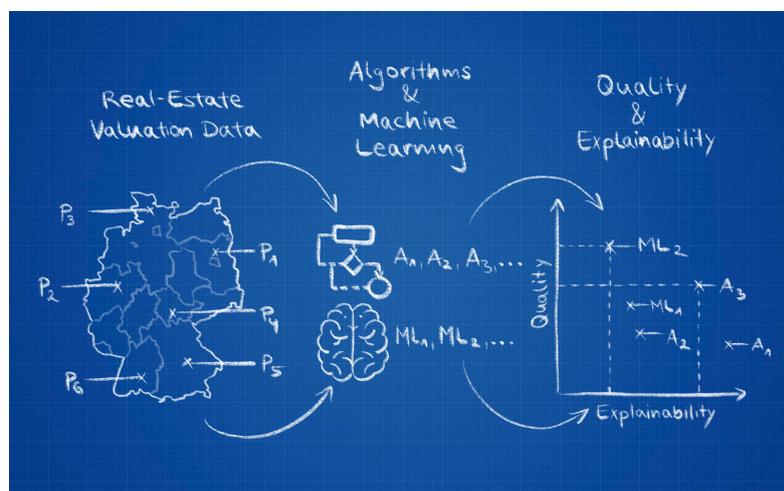
Improving Real-Estate Valuation

Background and Challenge. Real-estate business is booming. In the year 2018 alone, roughly 300 000 real-estate deals were made by private individuals in Germany. Before being sold, the property has to be valued accurately in advance. Unfortunately, this involves a number of manual tasks that need to be transparent and explainable, obeying laws imposed by the Federal Financial Supervisory Authority (BaFin).

In cooperation with the Deutscher Sparkassenverlag (DSV) group, we seek to understand the variation between the bidding and selling prices depending on various attributes of the property, such as its location or number of bath rooms. Further, we aim to analyze how well the valuation quality improves if we drop the restriction of the process being fully explainable with respect to many complex rules.

Vision. Given millions of real-estate valuation data and scientific freedom, we aim to enhance the current valuation process. As the core goal of the project, we want to investigate and understand the underlying structure of the data and learn relations not revealed by conventional methods. We want to compare the accuracy of these new, possibly unexplainable approaches to the valuations approved by the BaFin. A visual representation of this vision is depicted in the figure below.

Additionally, building on these insights, we want to create a user interface that allows for more fine-grained searches and dynamic changes on the fly. This shall result in a Germany-wide map portraying the real-estate prices given a certain configuration.



Outline of the project setup. Given the real-estate valuation data, the goal is to analyze the data and to understand the tradeoff between quality and explainability of predictions produced by different approaches.

Industry Partner Contribution. The Deutscher Sparkassen- und Giroverband (DSGV) is one of the leading forces shaping the banking system in Germany, with their history dating back to the 20s and 30s of the previous century. Over the years, the subgroup DSV specialized in consulting tasks, providing technical devices, and offering solutions, for example, for payment transactions.

In their longstanding presence, the DSV gathered a couple of millions of real-estate valuation data, collected from valuations and consulting, agency work, and insurance work. This data on real-estate valuation is at the core of our project.

Our Contribution. We work closely with you and provide expertise in algorithm engineering, structural and empirical analysis, as well as big data analysis and visualization. We also guide you into understanding real estate economics and relevant theoretical models. We support you in developing the necessary tools and artifacts for creating software interfaces, analyzing the data and creating visualizations.

Your Contribution. Working in a team, you analyze the provided data, come up with different methods of valuating real estate in a not fully explainable manner, and create a visualization tool that displays the real-estate pricing on a Germany-wide map. Supported by us, you learn how to manage a team and approach challenging tasks that are unsolved so far. Having an interest in solving novel problems as well as joy in developing a software system that you help shape are very welcome. We are looking forward to working with you.

Cooperation Project. The bachelor project is offered by the Algorithm Engineering group in cooperation with the DSV. The cooperation is based on a joint project with the Information Systems group at HPI and the International Real Estate Business School of the University of Regensburg. As the data is confidential, you will have to sign a non disclosure agreement.

Supervisors.



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