

Forschungszentrum Allgäu (FZA)

Mobilizing Universities of Applied Sciences for Horizon 2020

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Forschungszentrum Allgäu (FZA)

Kempten, the city on the river Iller is located deep in the south of Germany, on the northern edge of the Alps in the spa and holiday region Allgäu. The Allgäu is notable for its beautiful landscapes. Besides tourism the building of machines is an important factor of economy.

Kempten University of applied sciences is a cosmopolitan university in Allgäu which offers applied, interdisciplinary, international and pioneering higher education courses. Besides the education, the university offers a wide field of research- & development projects.



Research focuses at the UAS Kempten

With the institute "Forschungszentrum Allgäu FZA" and the new founded network "Technologienetzwerk Allgäu TNA" the university is advanced to a platform for customers and partners in common public government-funded projects and contract research. Due to the regional, national and European partners, the university is a nationwide research facility in its fields.

- 1. Energysystems and engineering
- 2. Connected mobility and automotive engineering
- 3. Production and automation engineering
- 4. Health Care Management
- 5. Innovative forms of teaching and learing

In total the UAS Kempten has over 25 active R&D Projects and over 60 scientific employees.





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Research focus - Connected mobility and automotive engineering



Hochschule Kempten University of Applied Sciences



- At the center of the project is the diversity of the fleet
- Vehicles of all kind, with different operators and different use cases are operated with an unified, newly developed ICT-System and a public and private charging infrastructure
- By areal- and user-related mobility and market-research activities, the basis for the development of suitable business models and marketing concepts is created.
- Different models evaluating the life expectation of batteries are developed on the basis of measurements and tests
- A driver assistant system with eco –routing and reliable vehicle range prediction is developed and tested.
- Tourism acts as an ambassador
- Rural settlement structure
- Topographic and climatic challenge





Technologie Netzwerk Allgäu Elektromobilität

Data acquisition in a vehicle at the Kempten Universi Hochschule **e** Kempten of Applied Sciences University of Applied Sciences Forschungszentrum Allgäu (FZA) e-mobilität allgäu 🧧 **Tablet with Android** range map ELEKTROMOBILITÄT POWERED BY ABT POWER SoC CAN Processing of the GPS data WLAN **HKE-DB** ((•)) - data administration - data recording - vehicle administration - data evaluation **GSM/UMTS** Energy data from the battery status every minute - state-of-charge Total data every 10 minutes - power - voltage - temperature Load data from the vehicles



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Creation of a range map based on the energy model

- Utilization of the energy model of the vehicle for the calculation of the energy demand of a route using (adaptive) driver models
 - Important: the classification of the roads \rightarrow
- Consideration of the driving behaviour during the trip and adjustment of the range by means of the actual consumed energy
- Consideration of the current SOCs for the calculation of the range map
 - \rightarrow Direct connection to the data logger

For the forecast of the range, it is necessary to accumulate the map data with specific acceleration values



Kempten



Bad Wurzach



e-mobilität allgäu 🧧 Forschungszentrum

Research focus - Innovative forms of teaching and learing

- Entrepreneurship, e.g. eCollaboration within teams, access to risk financing institutions/venture capital
- Innovation in SME
- Innovative eLearning in SME
- Process optimization in the manufacturing industries
- Knowledge management
- Cultural and creative industries





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Industryconnection in R&D-projects



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The UAS Kempten has over 90 national and international industry and research partners.

Partner selection:



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Intent of Mobilizing 2020



Forschungszentrum Allgäu (FZA)

1. Energy systems and engineering

smart grids, feeding energy back to the grid / energetic recovery, power-heat coupling

2. Connected mobility and automotive engineering

vehicle analysis, datalogger development, data acquisition, fleet operators, car2X, power consumption

3. Production and automation engineering

process monitoring and optimization in the fields of foundry engineering, friction coating and press-bent-technology, optimization of materials

4. Health Care Management

health care strategies, supply concepts for chronic diseases, aging society, work-place health promotion, labor market, social- and employment policy, migrants and intercultural competences

5. Innovative forms of teaching and learning

new approaches to extra-occupational studies for professionals in the field of youth work, theory-practice exchange, blended learning, intercultural opening in the field of youth work, professionalization of the teaching and learning in the field of software engineering integrative approach to competencies development