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D4.1– TRAINING PROGRAM, CAREER DEVELOPMENT PLAN, AND EVALUATION QUESTIONNAIRE

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Author	Keyvan Aghababaiyan
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1 INTRODUCTION

The training plan summarizes the set of learning activities carried out throughout the project. It has been structured to equip the researcher with the technical and transversal competencies required to achieve the project's objectives and to support the researcher's long-term professional development. Table 1.1 presents all planned activities, indicating their category, timeline (start and end month), and estimated workload. Additional information on both technical and non-technical components is provided in Sections 2 and 3. The document is intended to be flexible and may be revised during the project to reflect evolving requirements.

Table 1.1. List of training activities.

ID	Title	Type	Start	End	Hours
T1	Advanced CAM simulator training	T	M1	M4	40
T2	Training in control theory for vehicular systems	T	M1	M10	80
T3	Deep learning specialization	T	M3	M8	80
T4	Conoce UMH (TBC)	NT	M12	M13	20
T5	Additional training activities	NT	|M1	M18	20

2 TECHNICAL TRAINING

2.1 ADVANCED CAM SIMULATOR TRAINING

The successful execution of the project requires the researcher to work with accurate and realistic Connected and Automated Mobility (CAM) simulations. For this purpose, the researcher received dedicated training on the CAM simulation framework developed at the UWICORE laboratory of UMH. This platform integrates Robot Operating System (ROS) -based components with CARLA's detailed 3D environmental and sensor modelling, combined with an AUTOWARE-driven autonomous driving stack that enables realistic vehicle behavior based on perception inputs. The training focused on understanding the structure and capabilities of the simulator, reviewing its technical documentation, and completing guided practical sessions with the lab technician responsible for system maintenance. After this training, the researcher can independently deploy and operate the simulator, including:

- Installing and configuring the full simulation framework.
- Setting up road environments and traffic conditions by selecting topologies and adjusting vehicle density.
- Defining sensing configurations for each connected vehicle, including camera, lidar, and radar modalities.
- Running simulation experiments and exporting the generated data for further analysis and dataset construction.

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2.2 TRAINING IN CONTROL THEORY FOR VEHICULAR SYSTEMS

The project also involves concepts rooted in control theory, particularly those related to stability, feedback regulation, and decision-making in vehicular and networked systems. The researcher already has a solid foundation in classical and modern control theory, supported by previous coursework and independent study of established textbooks in the field. Nonetheless, given the relevance of control-oriented reasoning in Cooperative, Connected, and Automated Mobility (CCAM), additional self-training will be undertaken to reinforce key topics such as nonlinear control, optimal regulation, and model-predictive strategies applied to vehicular environments. This supplementary training will ensure that the researcher can effectively integrate control-theoretic principles into the modelling and analysis tasks of the project, particularly in scenarios where timing, stability, and decision robustness are critical.

2.3 DEEP LEARNING SPECIALIZATION

The project makes extensive use of advanced Artificial Intelligence (AI) methods, including emerging Generative AI techniques, and therefore requires up-to-date knowledge of modern machine learning frameworks. While the researcher already has an initial background in AI, he will complete the "Deep Learning Specialization" offered by DeepLearning.AI on Coursera to strengthen his expertise and to acquire training on recent developments such as Transformer-based architectures and generative models. This coursework will provide the technical skills needed to address the AI-driven components of the project and will support the production of high-quality and innovative research outputs. Further information about this training activity is available at [1].

3 TECHNICAL TRAINING

3.1 CONOCE UMH

Conoce UMH is an annual professional-development program coordinated by UMH (the host institution) together with RUVID, the regional university network. It brings together a set of workshops and seminars focused on broad, cross-disciplinary skills, ranging from innovation management and technology transfer to collaborative research practices, intellectual property strategy, and the basics of patent drafting. The initiative has run for five consecutive editions so far, and the university plans to launch its sixth edition in 2026.

3.2 ADDITIONAL TRAINING ACTIVITIES

In addition to the planned training modules, the researcher will attend a set of occasional seminars and short instructional sessions organized by UMH throughout the year. These activities typically address research-related methodologies, innovation and knowledge-transfer practices, and other transferable skills that support the project's objectives. As these sessions are scheduled independently by the institution, their specific content and relevance will be detailed in subsequent deliverables.

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4 REFERENCES

[1] Deep learning specialization: https://www.coursera.org/specializations/deep-learning

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