



Funded by
the European Union



We Build Digital Shapers 2025: Empowering the next generation of tech leaders

Toolkit

April 2026

EU Project Reference: 2025-1-DE02-KA210-VET-000352493

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We are a globally active, volunteer-driven NGO that offers free, high-quality tech learning programs to bridge the digital skills gap. By providing access to essential tech skills, we empower individuals to create meaningful, positive change in their communities and beyond. **We build digital shapers who shape the future with tech for good.**

Purpose

- **Mission:** We believe everyone deserves access to digital education, regardless of background or resources. Our programs empower individuals to gain valuable tech skills, support them on their journey, and inspire them to make a difference.
- **Vision:** We envision a future where everyone can use their tech skills for good—to solve challenges, promote equality, and drive innovation.

Our Vibrant Community

- **Diverse and Inclusive:** 400+ global volunteers & 3,000+ educated techies local and remote
- **Local & Global teams:** 12 hubs worldwide & remote team
- **Supportive Network** for meaningful & strong connections

Learning at TechLabs

- **Personalized Learning:** Self-paced digital paths with mentor support.
- **Hands-on projects** with interdisciplinary teams.
- **Community Events** to enhance learning and connections.

The TechLabs Community

3,000+

Educated techies

400+

Voluntary members

Business, Engineering, Law, Medicine, Social Studies,
Physics and many more backgrounds

±49% female

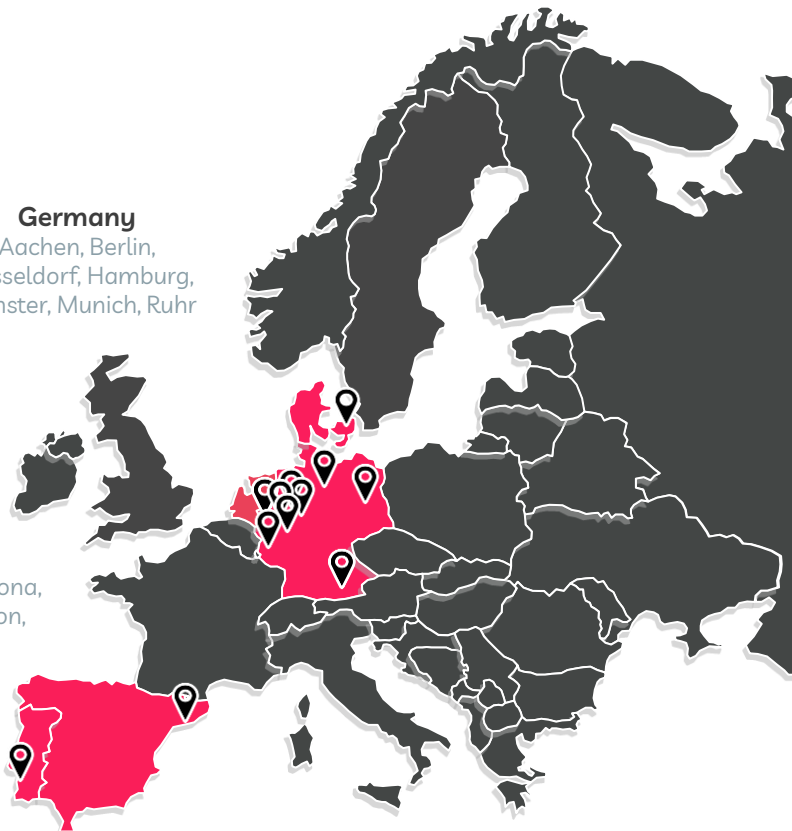
60+ countries

“

TechLabs has combined everything that makes learning successful: Bringing people together, providing suitable learning material, structure, and, of course, a mentor.

- Clio, participant of our program in Düsseldorf

”



Germany

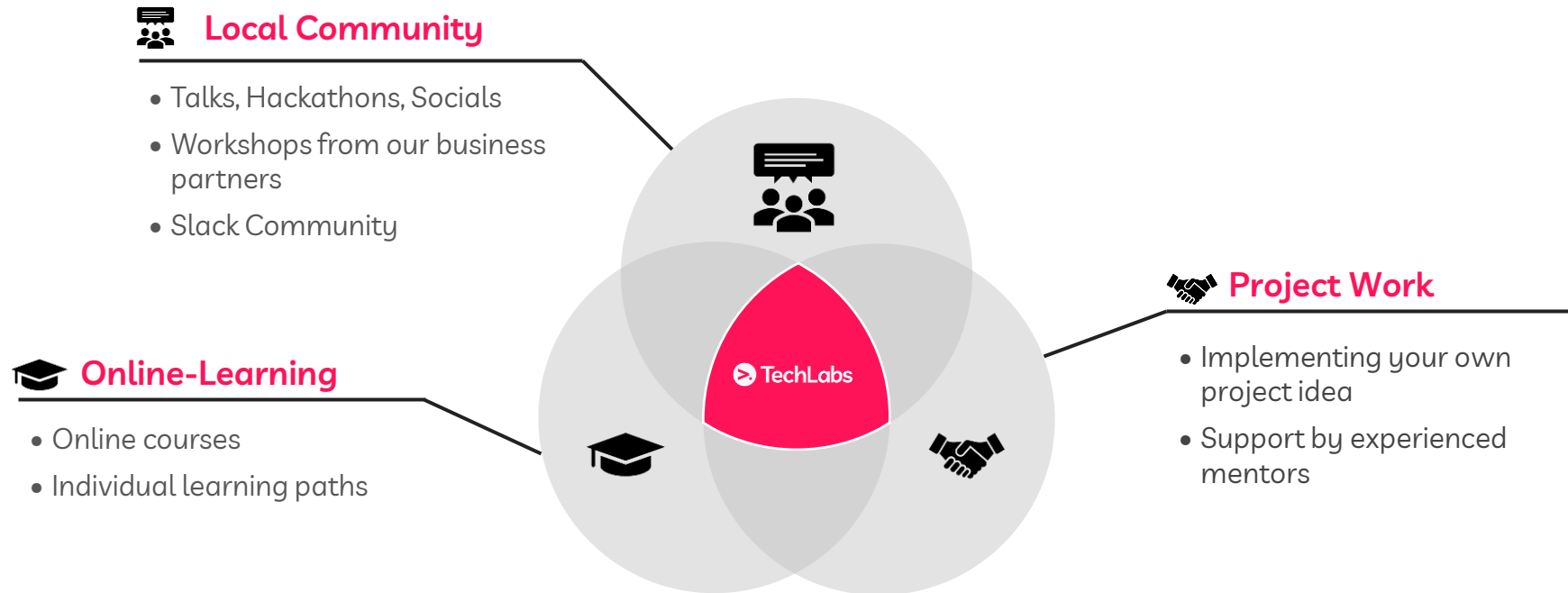
Aachen, Berlin,
Düsseldorf, Hamburg,
Münster, Munich, Ruhr

In Europe

Amsterdam, Barcelona,
Copenhagen, Lisbon,
Rotterdam

Our Digital Shaper Program

Online learning, local community and project work.



The TechLabs Digital Shaper Program

Our Tracks

Four tracks to compensate for the lack of digital skills



» Our TechLabs Academy offers 4 tracks **for free**. «



Data Science

Exploration of **raw data** in order to gain useful insights with the help of tools such as machine learning algorithms.



Artificial Intelligence

Deep neural networks or reinforcement learning systems capable **of solving large and complex problems**.



Web Development

Software development of prototype **websites** and **applications**.



User Experience Design

Conception of a **design tailored to customer needs** in order to enable users to make the best use of it.

WhomLab is shaping leadership in Europe



With headquarters in Prague and Lausanne, we run programs to help achieve gender balance in leadership. At WhomLab, we complement CVs and interviews, with gamification-based behavioral data to build balanced senior leadership teams and boards.

Purpose

- **Mission:** Supporting companies implement the 2026 EU Directive on women on boards and executive positions.
- **EU Directive Target:** 40% of women among non executive directors, or 33% across all board roles
- **Vision:** We envision leadership pipelines that are equitable and transparent, reducing bias in selection and promotion.

Our Vibrant Community

- **Going viral on LinkedIn:** In January 2026 our project **EU Women Leaders 2026** received over 1500 applications for just 20 seats.
- Given this response, we are already planning further cohorts with the EU Commission.



Program Overview

Structure, Timeline, Events, Applicant Statistics & the Tracks



Phase 1

Self-Paced Learning (Academy Phase)

3 Months

Participants join one of four specialist tracks and work through a curated, self-paced curriculum with mentor support.

Each track covers both foundational theory and applied skills, building the expertise needed for the collaborative project phase.

→ Web Development

→ Data Science

→ Artificial Intelligence & Deep Learning

→ UX Design

From October 13th to January 11th

Phase 2

Cross-Track Projects (Project Phase)

3 Months

Participants from different tracks join interdisciplinary teams to build real-world projects together.

6 diverse teams tackled meaningful challenges, applying their complementary skills across tech, design and data.

6 projects completed by cross-track teams

50 participants across all tracks

Culminating in the Digital Shapers Summit

From January 12th to March 29th



Program Structure: TechLabs Events

Welcome Event (October 14, 2025)

Official start of the semester and the Academy Phase.

Project Phase Kick Off (January 13, 2026)

Official start of the Project Phase, and tips for project management.

Design Processes (November 18, 2025)

Talk about Design Processes and the foundation of how to build a product.

Mid Semester Presentations (February 17, 2026)

Techies present their project progress.

Project Phase Info Session (December 2, 2025)

Introduction to the Project Phase, how to pitch your project, deadlines and requirements.

Final Presentations (March 24, 2026)

Techies present their final results.

Project Pitches (December 16, 2025)

Techies present ideas to be considered for the Project Phase.

Digital Shaper Summit (April 15, 2026)

One day event to celebrate the end of the semester, and showcase project work.

Applicant Statistics

Total number of accepted applicants

29

Data Science Techies

18

A.I. & Deep Learning Techies

26

Web Development Techies

14

UX Design Techies

=

87

Total accepted Techies

Applicant Statistics

Gender Split & Average Age

Gender Split

58 accepted techies identified as **Female**

29 accepted techies identified as **Male**

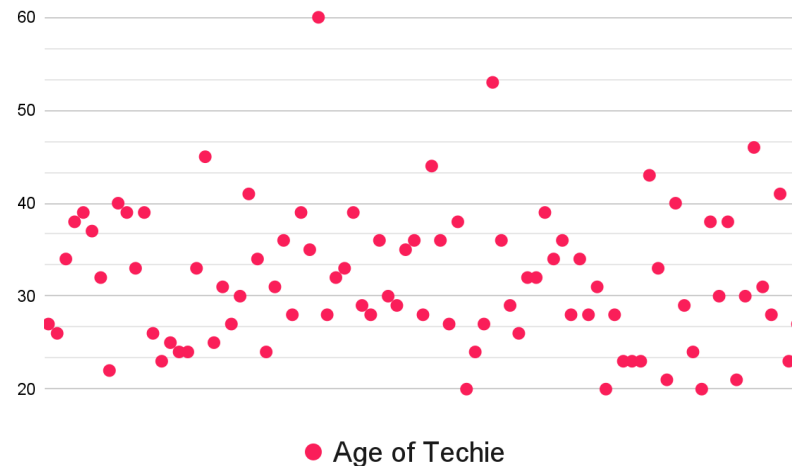


● Men (33,3%) ● Women (67,7%)

Average Age

The **oldest** accepted techie was **60 years old**

The **youngest** accepted techie was **20 years old**

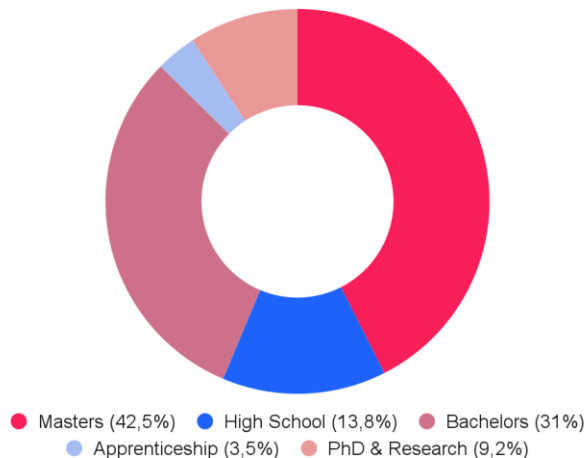


Applicant Statistics

Education Level and Current Occupation

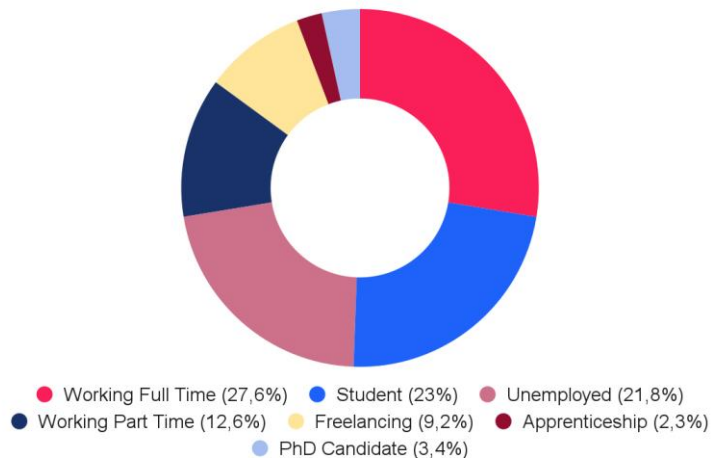
Education

Accepted techies came to the program with a diverse academic background, including **8 participants with PhD & research paths**, **37 with a Master's program**, and **27 with a Bachelor's degree**. Additionally, **3 participants** come from **apprenticeship routes**, while **12 are at the high school level**, reflecting a strong mix of both advanced and early-stage talent across the group.



Occupation

Accepted applicants joined the program with a diverse range of professional situations, with **24 participants working full-time** and **11 part-time**, alongside **8 freelancers**. Additionally, **20 were students**, while **19 were unemployed** at the time of joining. The group also included **3 PhD candidates** and **2 individuals in apprenticeships**, highlighting a mix of academic engagement and varied career stages.



The Four Learning Tracks

Curriculum & Self-Paced Phase





The Web Development track provides learners with a solid foundation in building modern, responsive, and functional websites and web applications. Structured for progressive skill-building, the program takes participants from core web fundamentals through front-end development, interactivity with JavaScript, back-end logic, databases, and real-world deployment.

Participants engage with industry-standard tools and frameworks including HTML5, CSS3, JavaScript (ES6+), Node.js, and SQL, following practical frameworks such as the Client-Server Model, RESTful API Design, Component-Based Architecture, the MVC Pattern, Database Normalization, and Responsive Design principles. This track is ideal for beginners exploring software or web development, career changers moving into tech roles, and professionals in adjacent fields seeking hands-on coding skills. No prior programming experience is required, curiosity about how the web works and a problem-solving mindset are all you need to get started. By the end of the program, participants will be able to build and deploy fully functioning web applications, with hands-on knowledge of front-end interfaces, back-end logic, database integration, and version control.

Foundations of the Web

An introduction to how the internet works, including the client-server model, HTTP, browsers, and the role of HTML, CSS, and JavaScript in building web pages.

HTML & CSS Essentials

Core building blocks of any web page. structuring content with semantic HTML and styling it with CSS, including layouts, the box model, Flexbox, and responsive design techniques.

JavaScript, React & Interactivity

Introduction to programming logic using JavaScript (ES6+) and the React framework, covering variables, functions, events, DOM manipulation, and dynamic behaviour to make web pages come alive.

Front-End Frameworks

How to build scalable, component-based user interfaces using a modern front-end framework, focusing on component architecture, state management, props, and rendering logic.

Back-End Development & APIs

Introduction to server-side programming with Node.js, Express and MongoDB - building RESTful APIs, handling HTTP requests, structuring routes, and connecting the front end to back-end logic.

Databases, Deployment & Version Control

How to store, retrieve, and manage data using SQL databases; how to use Git and GitHub for version control and collaboration; and how to deploy a full web application to a live environment.



The Data Science track is designed to equip learners with a practical and conceptual foundation in the end-to-end data science workflow. Participants progress through data literacy, programming, statistical thinking, data wrangling, visualisation, and machine learning developing the skills needed to extract insight and communicate findings from real-world datasets.

Across the program, students engage with industry-standard tools and frameworks including Python, Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, and SQL, guided by core methodologies such as the CRISP-DM process, Exploratory Data Analysis (EDA), the Bias-Variance Tradeoff, Supervised vs. Unsupervised Learning, Feature Engineering, and Storytelling with Data. This track is ideal for beginners curious about data and analytics, professionals in business or research roles seeking data fluency, and career changers looking to move into data-driven fields. No prior programming or statistics experience is required - an analytical mindset and a curiosity for patterns and problem-solving are all you need to get started. After completing the program, participants will be able to collect, clean, analyze, and visualise data, build and evaluate predictive models, and communicate data-driven insights clearly and effectively to both technical and non-technical audiences.

Introduction to Data Science & Python

An overview of what data science is, why it matters, and how it is applied across industries. Covers the data science workflow, key roles in the field, and an introduction to Python as the primary programming environment.

Data Manipulation & Preparation

How to collect, clean, and transform raw data into a usable format, covering missing values, data types, merging datasets, and using Pandas and NumPy to manipulate structured data efficiently.

Exploratory Data Analysis & Statistics

How to investigate datasets to uncover patterns, distributions, correlations, and anomalies. Introduces descriptive and inferential statistics, hypothesis testing, and the principles behind drawing meaningful conclusions from data.

Data Visualisation & Storytelling

How to communicate data findings visually and narratively, using Matplotlib and Seaborn to build charts, dashboards, and reports that convey insight clearly to both technical and non-technical audiences.

Machine Learning Fundamentals

An introduction to predictive modeling using Scikit-learn, covering supervised learning algorithms (regression, classification), model evaluation metrics, the bias-variance tradeoff, and the principles of training, validating, and testing models.

SQL, Databases & Capstone Project

How to query and manage structured data using SQL, including joins, aggregations, and subqueries. The module concludes with a capstone project where participants apply the full data science workflow to a real dataset, from raw data to final insight.



The AI & Deep Learning track is designed to take learners from the conceptual foundations of artificial intelligence through to the practical implementation of deep learning systems. Participants progress through the history and landscape of AI, core machine learning principles, neural network architecture, computer vision, natural language processing, and the responsible deployment of AI models in real-world contexts. Across the program, students work with industry-standard tools and frameworks including Python, TensorFlow, Keras, PyTorch, Hugging Face Transformers, and OpenCV, guided by key methodologies such as the Universal Approximation Theorem, Backpropagation & Gradient Descent, Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), the Transformer Architecture, Transfer Learning, and Responsible AI principles. This track is ideal for learners with some programming or data science experience who want to go deeper into AI, professionals looking to understand and apply modern machine learning techniques, and practitioners seeking to build, fine-tune, and deploy neural network models. A basic familiarity with Python and fundamental machine learning concepts is recommended before starting. After completing the program, participants will have a strong conceptual and practical understanding of how deep learning systems work, how to design and train neural networks, how to apply AI to vision and language tasks, and how to evaluate and deploy models responsibly in production environments.

Foundations of Artificial Intelligence

An overview of the AI landscape, its history, key milestones, and how it has evolved from rule-based systems to modern machine learning. Covers the distinction between narrow and general AI, core terminology, and the ethical considerations shaping the field today.

Neural Networks & Deep Learning Fundamentals

How neural networks are structured and how they learn, covering perceptrons, activation functions, forward propagation, backpropagation, and gradient descent. Introduces TensorFlow and Keras as frameworks for building and training networks from scratch.

Computer Vision & Convolutional Neural Networks

How deep learning is applied to image data and recognition, covering CNN architecture, pooling, feature maps, and object detection. Participants build and train vision models using PyTorch and OpenCV, and explore transfer learning to leverage pre-trained models for new tasks.

Natural Language Processing & Transformers

How AI understands and generates language, from tokenisation and embeddings to recurrent architectures and the Transformer model. Covers attention mechanisms, BERT, GPT-style models, and hands-on use of Hugging Face Transformers for text classification, summarisation, and generation tasks.

Generative AI & Advanced Architectures

An exploration of generative models and cutting-edge deep learning architectures, including Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), diffusion models, and large language models (LLMs). Participants experiment with fine-tuning and prompting strategies for generative applications.

Model Evaluation, Deployment & Responsible AI

How to rigorously evaluate model performance, address overfitting and bias, and package AI systems for production. Covers MLOps fundamentals, API-based model serving, monitoring in deployment, and the principles of fairness, transparency, and accountability in AI.



The UX Design track curriculum is designed to provide learners with a strong foundation in User Experience Design through a structured, hands-on learning journey. Participants progress through core UX concepts, practical methods, and industry-standard tools used to design digital products that are intuitive, user-centered, and impactful. Across the program, students explore the full UX design process, from understanding user needs and framing problems, to generating ideas, structuring information, creating interfaces, building prototypes, and validating solutions through testing, through practical UX frameworks such as Design Thinking (Empathise, Define, Ideate, Prototype, Test), User-Centered Design, Problem Framing & Opportunity Mapping, Information Architecture Principles, the Low-Fidelity to High-Fidelity design process, Jakob Nielsen's Usability Heuristics and Iterative Design. The UX Design track is ideal for beginners exploring a career in UX Design, career changers transitioning into digital roles, professionals in adjacent fields seeking UX knowledge. No prior UX design experience is required, but curiosity about digital products and user behavior as well as interest in solving problems creatively and analytically are recommended. After completing the learning phase, participants will have a clear understanding of the UX design process end-to-end, foundational knowledge in research, wireframing, UI design principles, prototyping using Figma and user testing.

Track Intro & Intro to UX Design

Introduction to how the track is structured and the main tools used. Overview of what UX Design is, why it matters, and how it shapes the way people interact with digital products and services.

Empathise & Define, Design in General

What is design and how to define and frame design problems. Identifying key design concepts and the principles of good design.

Ideate & Foundations of a UX Project

Introduction to the mindset of designing around user needs, behaviors, and goals through empathy, research, and continuous feedback. How to determine value and strategic opportunity, identify user needs, and generate and document design requirements.

Information Architecture & Wireframing

How to organize content, navigation, and structure so users can easily find information and move through a product intuitively. How early ideas are translated into low-fidelity layouts and flows to test concepts quickly before visual design begins.

User Interface Design & Prototyping

Introduction to visual design and interface design principles such as hierarchy, typography, spacing, color, and consistency to create polished interfaces. How to turn static designs into interactive prototypes that simulate real user journeys and product functionality, with Figma.

User Testing & Heuristics

How to test designs with users, identify friction points, and improve experiences using established UX principles (Heuristics).

Tech Leadership Modules

Delivered by WhomLab across all tracks



Funded by
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WhomLab: Tech Leadership Modules



These cross-track leadership modules were delivered to all participants, covering the soft and strategic skills needed to lead in tech. Delivered at the summit and also online, sometimes for all participants at once, sometimes divided by track.

01

Your Gamified Leadership Profile

How to position yourself for success on your job searches: CVs must haves and your job interview persona.

02

LinkedIn for Career Growth

Building your permanent LinkedIn profile sections: Headline, About, Featured, all the steps until Recommendations.

03

Your Personal Brand

Networking like a pro. Assessing and planning your networking strategy. Avoiding Echo Chambers.

04

Your Brand, Tech Leadership

Self-assessing your speaking skills: Content and Delivery. Fillers, speed, the magic use of a pause.



Other Learning Resources

Git Mini Course, Visual Design Principles & Radar



The Git Mini Course is a practical, hands-on introduction to version control, designed to help participants understand how to track, manage, and collaborate on code effectively for the Project Phase. It starts by building a strong conceptual foundation, explaining what version control is, why it matters, and how Git differs from platforms like GitHub, before quickly moving into real-world application.

Throughout the course, participants learn how to set up Git locally and begin working with repositories, making commits, and managing changes through the staging area. As the course progresses, it expands into collaborative workflows by introducing remote repositories, allowing learners to push, pull, and synchronize their work using GitHub. A key focus is on branching and merging, enabling learners to work on features independently while maintaining a stable main codebase. The course also emphasizes understanding project history, giving participants the tools to review changes, undo mistakes, and confidently navigate different versions of a project. By the end, learners are introduced to standard industry workflows, including pull requests and team collaboration practices. The course equips them with the practical skills and confidence needed to use Git in real-world development environments, whether working independently or as part of a team.

Theory, Setup & Basics

Understand how Git tracks changes and why it's essential for collaboration:

- What is Git and why it matters;
- What version control is and why developers use it;
- The difference between Git (tool) and GitHub (platform);
- Basic concepts like repositories, commits, and history.

In Action: Push & Pull

Move from theory to tracking your first project locally:

- Installing Git and configuring your setup;
- Creating a repository;
- Core commands: init, add, commit, status;
- Understanding the staging area.

Pull Requests & Merge Conflicts

Understand how Git works beyond your machine and how it enables sharing and collaboration:

- How to create and connect GitHub repositories;
- clone, push, pull workflows
- SSH keys and authentication;
- Syncing local and remote work.

[Git Mini Course Link](#)

The Visual Design Principles resource introduces the core rules that guide how visual elements are arranged to create clear, effective and aesthetically pleasing designs.

It emphasizes why certain layouts work and how users perceive them, organising elements on the screen to support usability and clarity. It also covers the Gestalt principles, a detailed explanation of the principles of Visual Design, in detail and with practical examples, external resources to help make the best decisions and examples of good UI kits and style guides for inspiration.

This resource is meant to help participants make better choices visually, during their project work.

How Design is perception and the Gestalt Principles

How design is not about making things look nice, but about organising elements to support usability and clarity. An introduction to the Gestalt principles, detailing that people don't see individual elements first, they perceive the overall composition and patterns, meaning designers must think about how elements group, align, and relate visually.

Principles of Visual Design

Introduction to fundamental principles that shape every interface: balance and alignment, contrast, proportion and white space, emphasis, repetition and rhythm, movement and hierarchy.

External Resources

Extra resources on components, colour rules, spacing, design systems, icons, and fonts, as well as Figma's auto layout feature and how to work with it, and examples of good UI kits and style guides for inspiration for the projects.

[Visual Design Principles Link](#)

The starting point for all essential information about the semester, for participants.

Techie Code of Conduct

What is expected from participants in terms of event attendance and engagement, collaboration and conflict resolution, feedback and communication and their responsible conduct.

Semester Calendar

A detailed overview of all semester events, deadlines.

Event Resources

Links to all important resources on live events: recordings, slide decks, extra resources and submission forms.

Tool Overview

An overview on all tools used during the semester: slack and it's rules of engagement, Edyoucated and how to navigate it, Notion, Coursera and Udemu.

Project Pitch Playbook

Guidelines and tips and tricks to prepare a strong project pitch idea and it's presentation.

Project Phase Requirements

An overview of all the requirements for a successful project phase, from project management and accountability, the major weekly obligations of each team, how the mid semester and final presentations work and evaluation requirements.

Weekly Project Update Submissions

All weekly project update submissions, from all project groups.

Git Practices for UX Techies

How to work with Git as a UX techie, naming files, and folder structure and how to use Git to collaborate between UX techies.

Visual Design Principles

An extra resource all on Visual Design Principles and the core rules that guide how visual elements are arranged to create clear, effective and aesthetically pleasing designs.

Radar Link

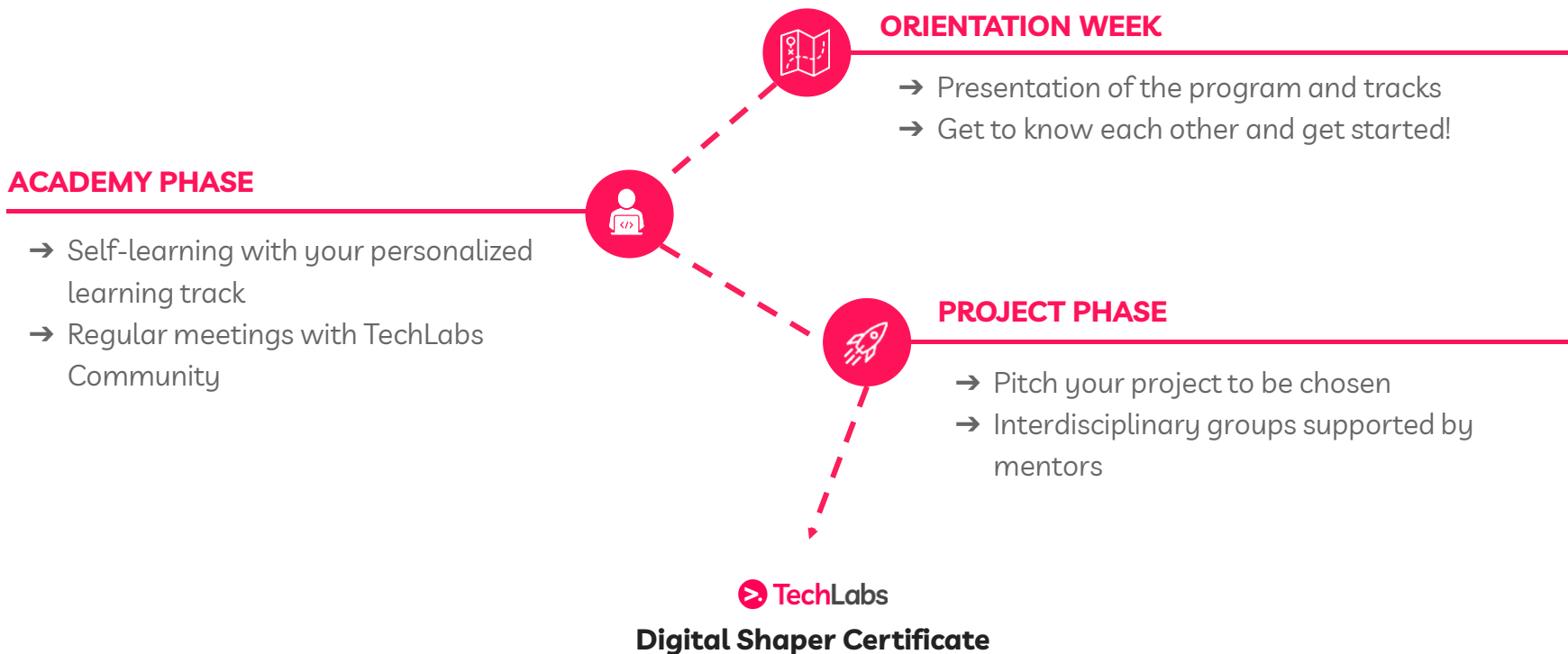
The Project Phase

Cross-Track Collaboration & Real-World Impact



Semester Structure

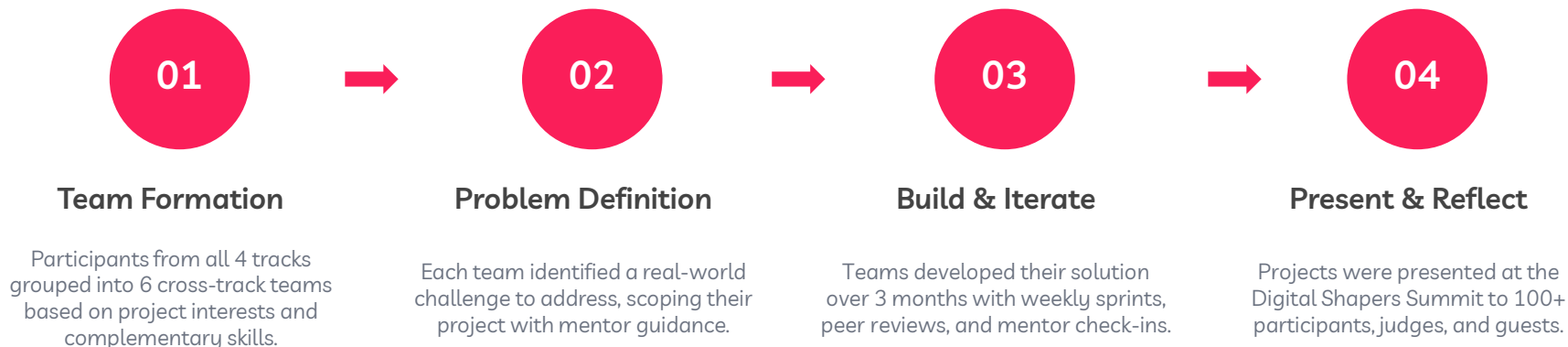
Learning to code online while doing project work.



Project Phase: How It Worked

After completing their individual tracks, participants joined cross-disciplinary teams to tackle real-world challenges.

Each of the 6 project teams brought together people from different tracks, combining web, data, AI, and UX skills to design and build meaningful solutions over 3 months.



6 Projects · 50+ Participants · 4 Tracks · 3 Months · 1 Summit

Project Overview

NextRead is a mood-driven book discovery web application designed to help users find their next read based on how they feel. Instead of relying only on genres or bestseller lists, the platform allows users to select from six moods or complete a short quiz, then uses a TF-IDF AI recommender trained on the Goodreads dataset to surface relevant book suggestions. Users can also search by title or author and save books to a personal reading list. The project combines emotional personalisation with practical discovery tools, creating a more engaging and intuitive alternative to traditional book recommendation platforms. By blending AI recommendations, search functionality, and a clean user experience, NextRead turns book browsing into a more human-centered and enjoyable process.

Team Composition

Web Dev	Data Science	A.I.&DL	UX Design
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Malin Chan-Hellemeier, WD Full Stack

Roshana Kharbuja, WD Backend

Judith Wenk, Data Science

Mentors: Peter Christ and Bassma Hefni

Timofei Surov, A.I.&DL

Jonathan Rodriguez, UX Design

Mariyah Nasir, UX Design

Challenges

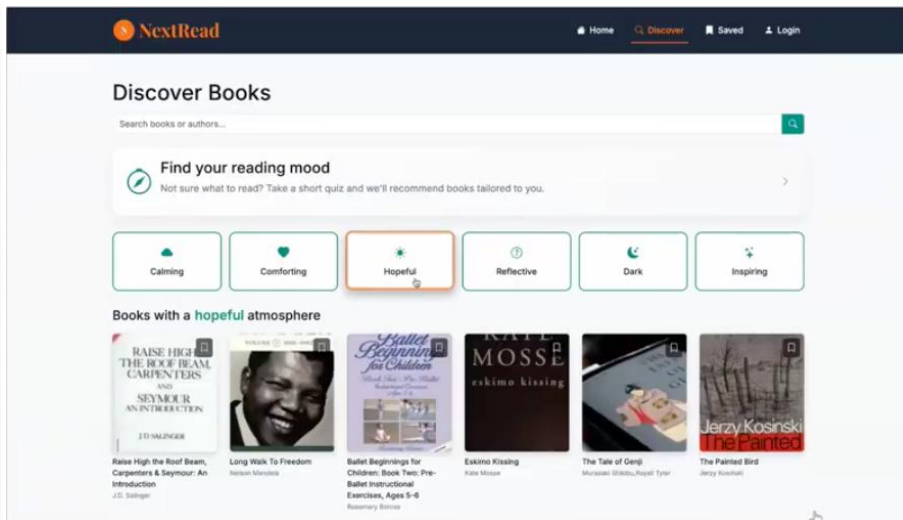
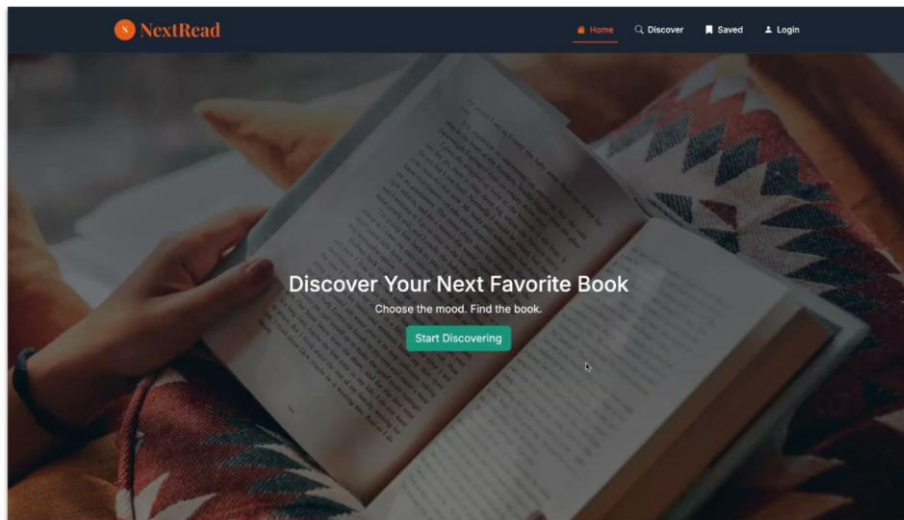
- **Translating Emotion into Recommendations:** Creating a recommendation system based on moods such as Calming, Hopeful, or Dark required converting subjective emotional states into meaningful search logic and relevant book matches.
- **Balancing Discovery vs Relevance:** Ensuring recommendations are both accurate and fresh, helping users find books they are likely to enjoy while still introducing new options.
- **Cross-Functional MVP Delivery:** Aligning UX concepts, recommendation logic, and technical implementation within a limited sprint timeline while maintaining a coherent user experience.

Key Learnings

- **Simplicity Drives Engagement:** Users are more likely to use recommendation tools when onboarding and navigation are frictionless.
- **Good UX Strengthens Smart Features:** Even strong recommendation systems need clear presentation, trust signals, and intuitive flows to create value.
- **Collaboration Improves Outcomes:** Close coordination between designers, developers, and data contributors accelerates iteration and reduces handoff friction.

Outcome

NextRead successfully delivered a functional MVP as a full-stack web application that combines emotional personalisation with practical book discovery tools. The platform launched with a working AI-powered recommendation engine using TF-IDF and cosine similarity, enabling users to receive book suggestions tailored to their selected mood or quiz results. It also integrated a Goodreads dataset of more than 2,000 books through MongoDB Atlas, providing a strong content foundation for discovery. Core user features such as search, authentication, and saved reading lists were also completed, creating a well-rounded and user-ready experience. Overall, the project established a strong technical and product foundation for future development, with clear opportunities to expand into deeper personalisation, social discovery features, ratings systems, and mobile deployment.



Project Overview

SkipThat is a mobile-focused application designed to help users manage dietary restrictions.

The platform allows users to create personalised food profiles based on their dietary needs (allergies, intolerances, preferences) and receive tailored recipe recommendations with intelligent ingredient filtering. The app leverages machine learning and deep learning to classify ingredients and validate recipe safety.

Team Composition

Web Dev

Data Science

A.I.&DL

UX Design

Valerija Kuzema, WD Frontend

Sofia Oliveira, WD Backend

Alžbeta Tonuková, Data Science

Mentor: Zubin John

Trang Hoang, A.I.&DL

Mercy-Meryl Kirchhoff, UX Design

Challenges

- **Ingredient Normalisation & Classification Complexity:** Balancing precision vs recall across 6 dietary restriction categories and raw ingredient data from recipes, that contained non-relevant information like amounts, adjectives or descriptors.
- **Model Performance Accuracy:** Ensuring the deep learning "Dish Safety Check" feature accurately identifies ingredient violations without false positives/negatives that could affect user safety.
- **Cross-Functional Integration at Scale:** Ensuring data science pipeline outputs align with backend expectations and frontend presentation and the deep learning model inference worked seamlessly with user-submitted recipe data in real-time.

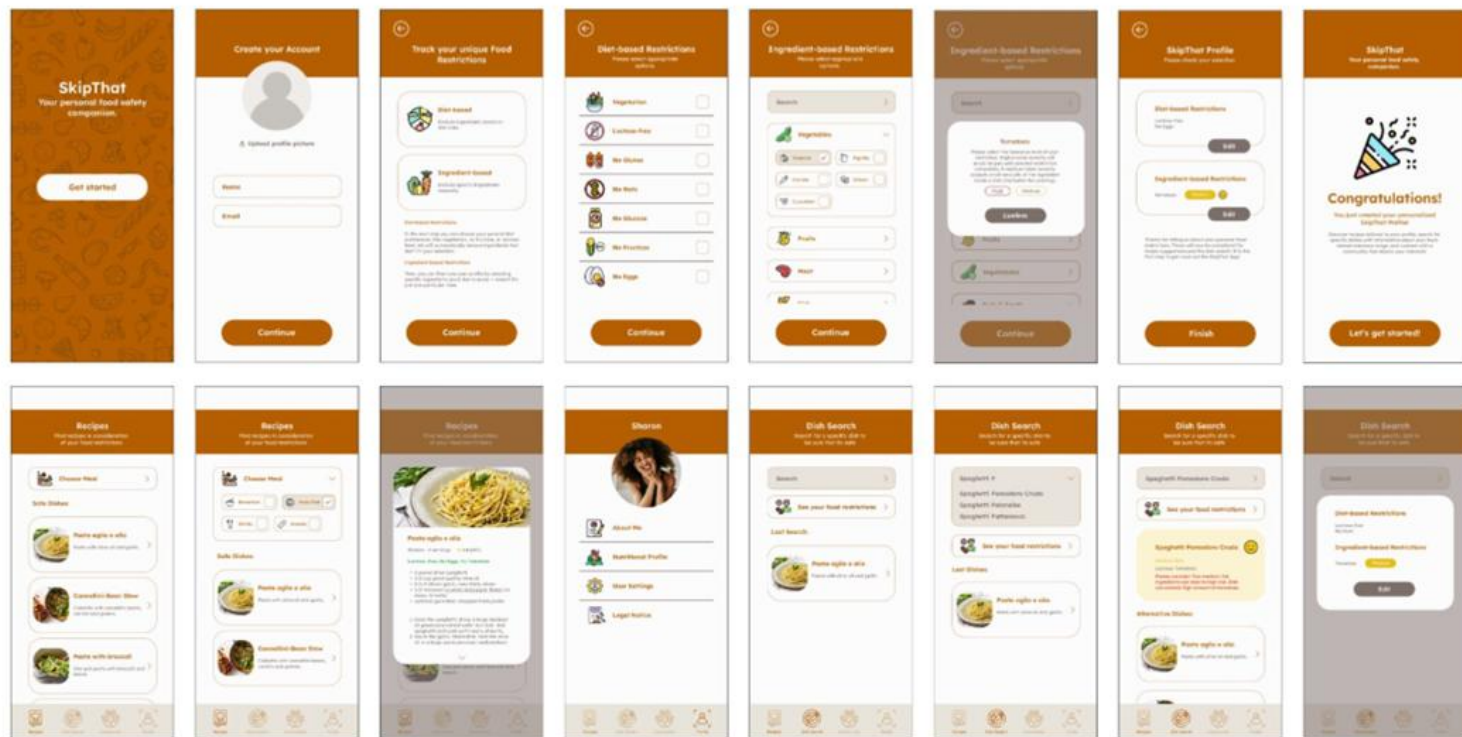
Key Learnings

- **Data Cleaning & Preprocessing Foundational Work:** Users are more likely to use recommendation tools when onboarding and navigation are frictionless.
- **Hybrid Approaches Beat Single Solutions:** Combining rule-based (dictionary), ML-based (kNN/SVM), and semantic (WordNet) approaches yielded better results than any single method.
- **User-Centric Design Requires Technical Understanding:** Recipe recommendation filtering logic needed to be transparent to users while remaining efficient.

Outcome

SkipThat successfully delivered a functional mobile-first MVP designed to help users manage dietary restrictions through personalised food profiles and safer recipe discovery. The platform enables users to set preferences such as allergies, intolerances, and dietary needs, then receive tailored recipe recommendations with intelligent ingredient filtering powered by machine learning and deep learning models. The final outcome included a complete ML pipeline for ingredient classification, a labelled recipe dataset across six dietary restriction categories, a deep learning "Dish Safety Check" feature, and a responsive frontend supported by backend API integration. Overall, the project proved the potential of combining AI-driven classification with user-friendly design to make everyday food choices safer, faster, and more accessible.

Mobile Screens



Project Overview

AgroVisionAI is an AI-powered web application created to help small-scale farmers detect plant diseases early and take action before crop loss occurs. By allowing users to upload a photo of a plant leaf, the platform delivers an instant diagnosis alongside treatment recommendations and prevention tips.

The project specifically addresses a major real-world challenge: many farmers lack immediate access to agricultural consultants, meaning diseases are often identified too late. AgroVisionAI transforms this process into a simple three-step experience: upload, analyse, and receive results, making expert-level support available directly from a mobile device or browser.

Team Composition

Web Dev

A.I.&DL

UX Design

Sabin Bajracharya, WD Frontend

Vera Martel, UX Design

Naiara Fernandez, A.I. & DL

Mentor: Timm Stelzer

Challenges

- **Building Trustworthy AI for Real-World Use:** Diagnosing crop disease requires high accuracy, especially when users depend on results to protect harvests, ensuring reliable predictions while handling non-tomato images and visually similar diseases.
- **Designing for Diverse User Needs:** Farmers interviewed ranged from non-digital users to tech-savvy operators, meaning the product had to be extremely simple, intuitive, and accessible across different skill levels.
- **Integrating Speed with Performance:** The application needed to combine frontend usability with fast backend AI inference, delivering meaningful results in seconds on mobile and desktop devices.

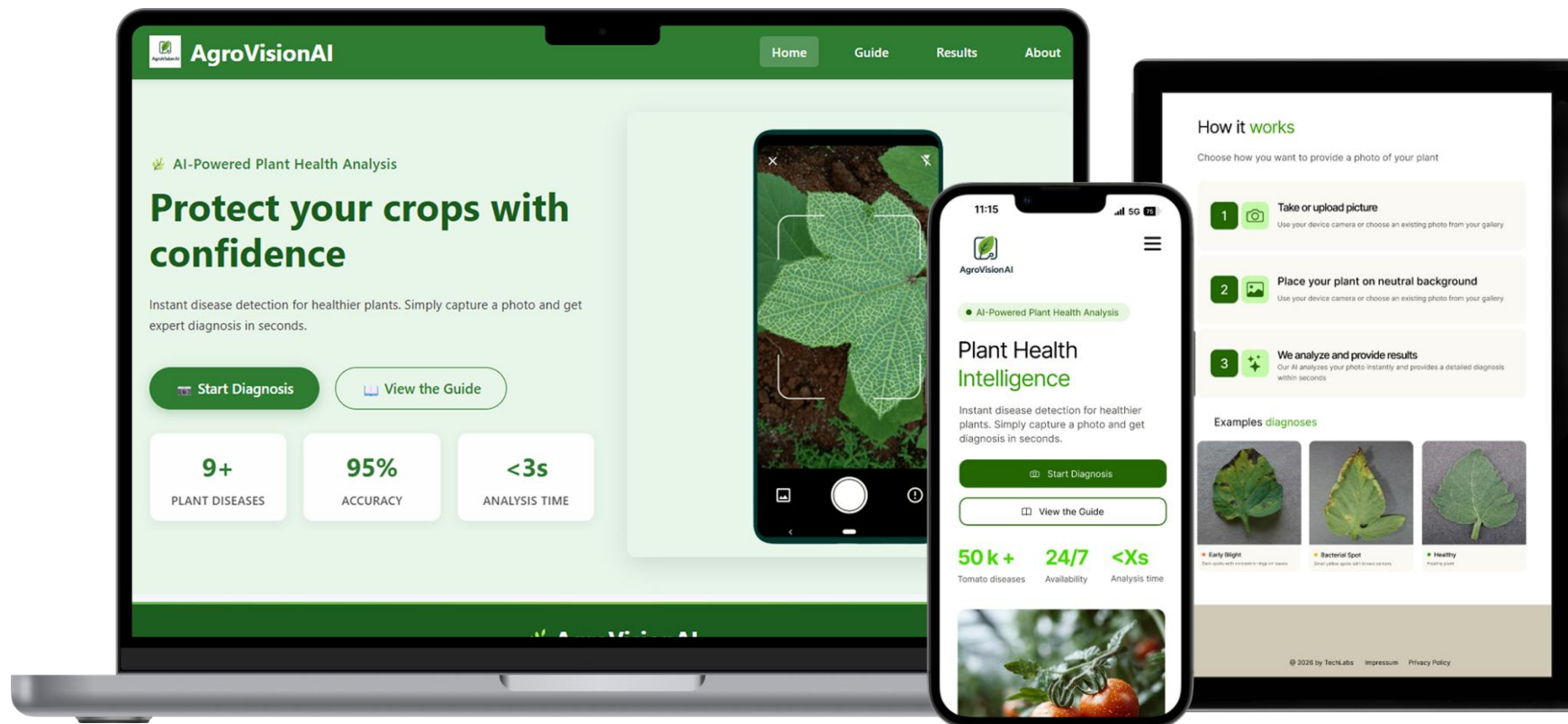
Key Learnings

- **User Research Creates Better Solutions:** Direct interviews with farmers revealed pain points, pricing realities, and usability expectations that strongly shaped the final product direction.
- **Simplicity Drives Adoption:** Clear workflows, visual feedback, and jargon-free recommendations are critical when designing tools for non-technical users.
- **Cross-Functional Collaboration Accelerates Delivery:** Strong coordination between AI, frontend, backend, and UX disciplines enabled the team to move from concept to deployed prototype efficiently.

Outcome

AgroVisionAI successfully delivered a fully functional prototype that combines AI-powered disease detection with a user-friendly web experience. Users can upload a plant leaf image and receive a diagnosis with treatment steps, prevention guidance, and confidence-based results in under three seconds. The deployed solution achieved over 96% accuracy across multiple tomato disease categories, demonstrating strong technical feasibility. Beyond the MVP, the project established a scalable foundation for future growth, including support for more crops, offline functionality, multilingual access, and expanded expert systems. Overall, AgroVisionAI represents a meaningful example of how AI can solve practical agricultural challenges and create positive real-world impact for underserved communities.

Mockups of desktop, tablet and mobile versions of the app



Project Overview

Marketing Copilot is a digital solution designed to act as a "GPS for the inexperienced marketer," bridging the gap between strategic planning and content execution. The project transforms marketing from a daunting process into a structured, gamified experience with step-by-step guidance, it helps builders, entrepreneurs, and subject matter experts move from "blank page fear" to effective content execution through automation and simplified jargon-free guidance. The app combines a dual-pillar system of a marketing recipe book, pre-built goal-oriented pathways (e.g., "7-Day Pre-Launch Hype," "First 10 Customers") broken into micro-tasks under 30 minutes each and content engine & PostMagic, an AI-powered one-input, multi-format content generation for LinkedIn, X/Twitter, and email with branded visuals.

Team Composition

Web Dev	Data Science	A.I.&DL	UX Design
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Elizabeth Alvizures, WD Frontend

Houda Ouhmad, A.I.&DL

Ekaterina Myshalova, WD Frontend

Maria-Alexandra Radu, UX Design

Radwa Abdelhafez, Data Science

Mentor: Arpad Dusa

Challenges

- **Bridging Strategy-to-Execution Gap:** Users suffer from "blank page paralysis" and lack marketing expertise, making it difficult to move from planning to actual content creation. Complex marketing jargon creates cognitive overload.
- **Maintaining Authentic User Voice with AI:** One-input, multi-format AI content generation risks creating generic, impersonal output that doesn't retain the user's authentic brand voice. "Human-in-the-Loop Editing" with structured prompts to ensure AI output remains personalized and authentic.
- **Visual Design for Non-Designers:** Most target users lack design skills to create professional-looking branded visuals and carousels, limiting content quality.

Key Learnings

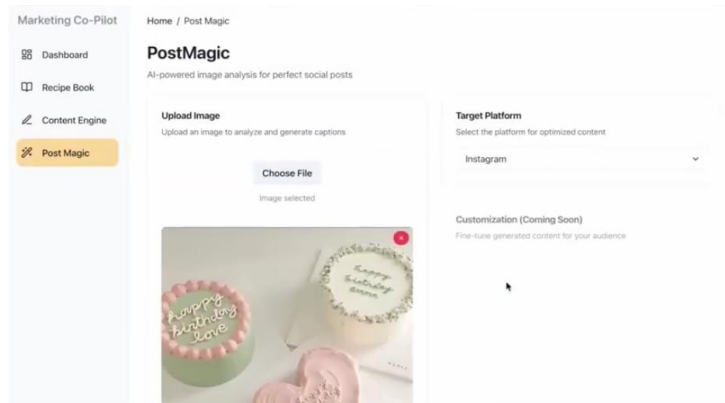
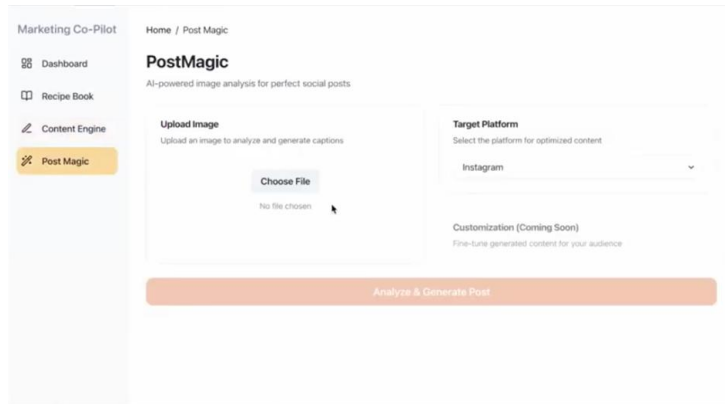
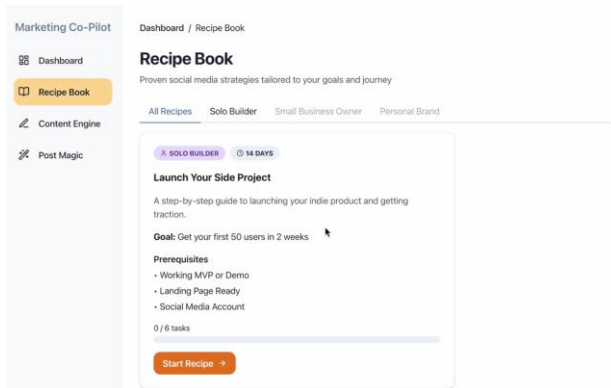
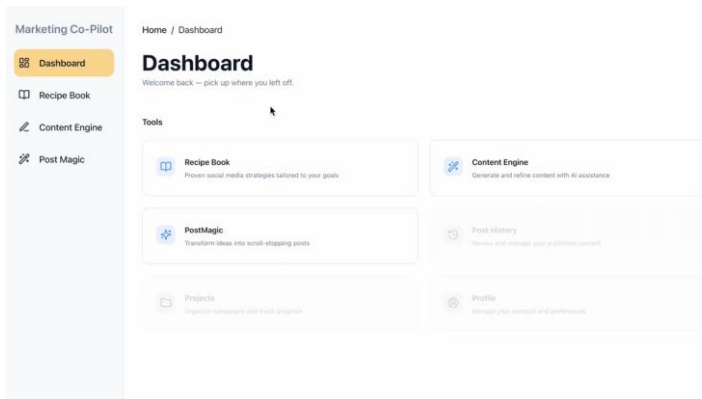
- **Simplifying Complexity Drives Adoption:** Breaking down overwhelming marketing strategies into micro-tasks with gamified progress tracking proved more effective than offering comprehensive but intimidating all-in-one solutions.
- **UX Research & Iterative Design Matters:** A user-centered approach validated persona assumptions and refined the interface based on real feedback rather than assumptions.
- **Cross-Functional Collaboration Accelerates Problem-Solving:** Having a dedicated team enables holistic solutions: more cohesive results where research informed technical decisions and technical realities shaped product priorities.

Outcome

Marketing Copilot PostMagic successfully delivered a functional MVP within a 10-week sprint cycle, validating the concept of an AI-powered platform that helps inexperienced marketers move from strategy to execution with greater confidence and speed. The final product combined guided "recipe-based" marketing workflows, progress tracking, and AI-powered content generation, creating a practical end-to-end solution for founders, builders, and small business owners. The outcome demonstrated strong user value by simplifying complex marketing tasks into manageable steps while reducing the intimidation often associated with content creation. Key deliverables included interactive prototypes, a working content generation engine powered by LLMs, and the PostMagic visual creation feature for branded assets. Overall, the project proved that combining structured guidance with automation can significantly lower barriers to effective marketing execution.

Marketing Copilot PostMagic

Desktop Screens



Project Overview

DaySaver is a smart breakfast assistant app designed to help users make healthier food choices by understanding how meals affect energy levels, satiety, and blood sugar response. The system combines AI-powered image recognition, nutritional analytics, and data science models to transform complex nutritional data into simple, actionable guidance.

The project is a full-stack application with frontend with React Native mobile app (Expo) with AI photo analysis and manual food input, backend with FastAPI Python server with PostgreSQL database and AI Integration with Google Gemini 2.5 Flash for image detection and RAG-based meal analysis.

Team Composition

Web Dev

Data Science

UX Design

Ekaterina Zhuchkova, WD Backend

Mariana Schmal, UX Design

Kenneth Apeh, WD Frontend & DS

Dan-Yin Hsu, UX Design

Hieu Minh Dinh, Data Science
Mentor: Andrea Racheita

Challenges

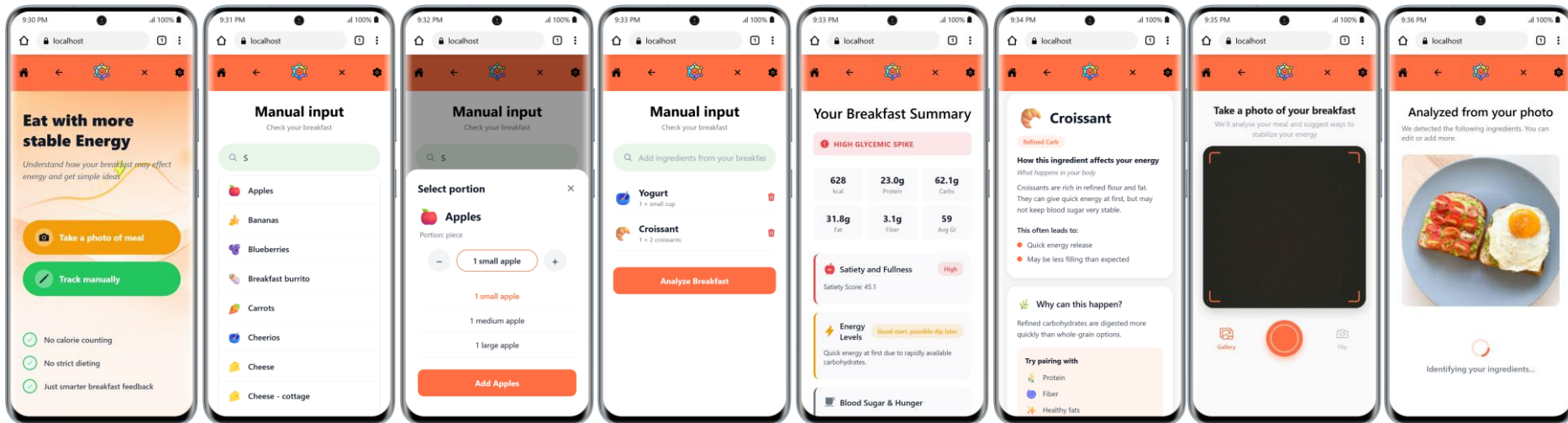
- **AI Image Recognition Accuracy:** Accurately identify breakfast items from photos and extracting nutritional data with precision.
- **Real-time Data Synchronization:** Keeping mobile app UI responsive while querying large food databases and calculating personalized meal analytics.
- **Complex Nutritional Calculations & Recommendations:** Processing multiple nutritional parameters (macros, GI rating, satiety, blood sugar impact) into simple, actionable recommendations.

Key Learnings

- **AI/ML in Production Applications:** Implemented practical AI models (image detection with Gemini) in a user-facing application and handled AI API limitations and optimization.
- **Full-Stack Mobile & Web Integration:** Built a cohesive system bridging React Native frontend with FastAPI backend, applied modern mobile development patterns and mastered integration of external APIs (Google Gemini, PostgreSQL via Supabase).
- **Cross-Functional Agile Development:** Developed skills in API design for scalability and frontend-backend communication, and learned to balance technical complexity with user-friendly experience.

Outcome

The project successfully progressed from concept to a fully functional MVP, with the application going live through a downloadable Android APK and a hosted FastAPI backend deployed on Render. The team was able to deliver a working end-to-end product and validate the technical feasibility of the solution. From a user perspective, the platform includes several production-ready core features, such as image-based meal analysis, manual food input, and detailed nutritional breakdowns. These functionalities create a strong foundation for delivering immediate value to users seeking smarter and more accessible health tracking tools. The application was built using a scalable and modular architecture, enabling future enhancements to be integrated efficiently. Overall, the project represents a successful proof of concept for an AI-powered health technology solution, delivered through effective collaboration within a cross-functional team.



Project Overview

FutureYou is an AI-powered career path recommendation platform designed to help users explore career transitions through personalised, data-driven guidance. By analysing a user's current role, skills, interests, goals, and experience level, the platform recommends suitable future career paths, identifies missing skills, and generates a customised week-by-week learning roadmap.

The product addresses a common challenge faced by professionals navigating career change: uncertainty around what roles fit their profile and how to bridge the gap. FutureYou transforms complex career planning into a clear and actionable experience.

Team Composition

Web Dev	Data Science	A.I.&DL	UX Design
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Mikhail Pugachevskiy, WD Frontend

Malena Duroux, A.I.&DL

Nathallia Vieira, WD Backend

Salman Ahmed, UX Design

Soumya Dodamani, Data Science

Mentor: Rashmi D Souza

Challenges

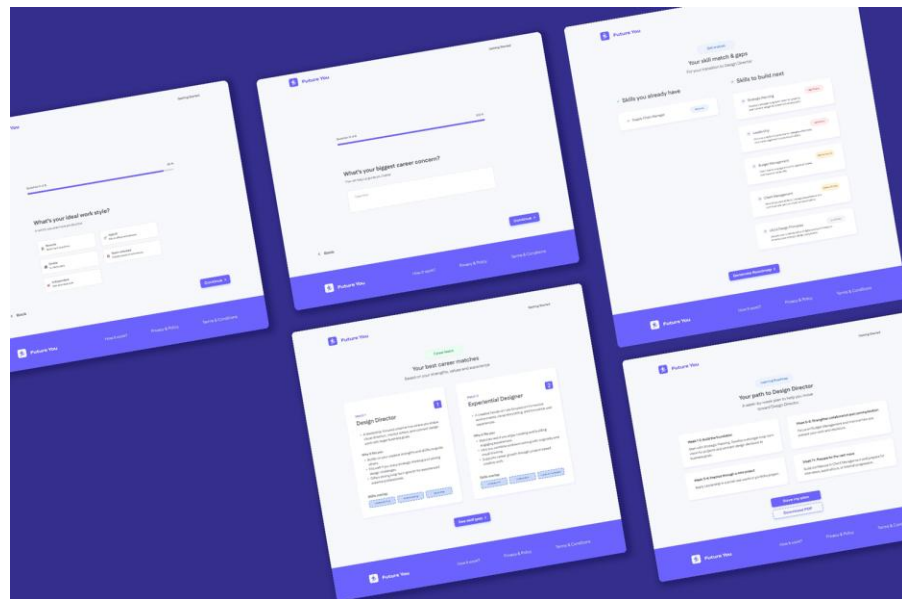
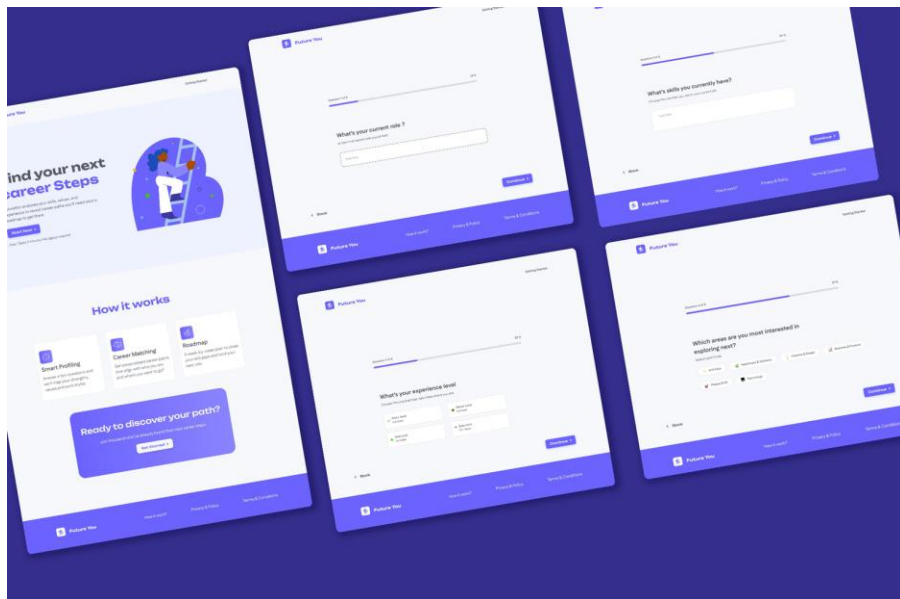
- **Translating User Profiles into Career Matches:** Converting qualitative user inputs such as interests, goals, and work style into accurate career recommendations required balancing structured data with flexible AI interpretation.
- **Multi-Service AI Architecture:** The platform relied on several integrated systems across React, Node.js, FastAPI, HuggingFace Spaces, and LLM APIs. Ensuring reliability, performance, and fallback behaviour across services was a significant technical challenge.
- **Making Career Change Feel Actionable:** Career recommendation tools often stop at suggesting roles. FutureYou needed to go further by clearly showing skill gaps and generating realistic learning roadmaps users could follow step by step.

Key Learnings

- **Personalisation Builds Trust:** Users engage more deeply when recommendations reflect their specific profile, concerns, and ambitions rather than generic job suggestions.
- **Hybrid Systems Improve Reliability:** Combining machine learning models with rule-based fallback logic created a more robust experience and reduced dependency on a single service.
- **Guidance Matters More Than Information:** Simply showing career matches is not enough. Users need clear next steps, timelines, and learning pathways to feel empowered to act.

Outcome

FutureYou successfully delivered a functional MVP that combines career matching, skill gap analysis, and personalised roadmap generation in one integrated platform. Users can complete a guided questionnaire, receive tailored career recommendations, and access structured week-by-week development plans powered by AI. The final product included a React frontend, Node.js backend, machine learning recommendation services, and Llama-powered roadmap generation deployed through HuggingFace Spaces. Overall, the project demonstrated strong potential as a scalable digital career transition tool that could evolve into a valuable resource for professionals, students, and career changers.



Semester Feedback

Participants & Graduates





The TechLabs community is a great environment to improve my tech and project management skills. My motto is "learning by doing", therefore I think that I could benefit greatly from participating in another project phase. I've really enjoyed working on an exciting project together with my team and loved that everyone could contribute to the final prototype regardless of their skill level.

— Alžbeta Tonyková, Data Science Track

What excites me most about returning is the opportunity to take my project from concept to reality. Deploying a working solution not just building it, but seeing it live and making an impact is incredibly motivating. I'm eager to push my skills further by tackling real-world challenges, collaborating with peers, and delivering something tangible that solves a problem or adds value.

— Houda Ouhmad, AI & Deep Learning Track

I would like to develop my portfolio with real life projects and interdisciplinary teams. I believe 10 weeks is a fairly good amount of time to develop a portfolio ready project. Having diversity of projects in my portfolio would make it solid and also help me identify/improve in areas where I need improvement. If I do it independently, I may not have access to interdisciplinary teams and with Techlabs as a platform and mentor support I believe, it would work out perfectly.

— Mariyah Nasir, UX Design Track

The Digital Shaper Summit

Celebrating 100+ Participants & Their Achievements





Funded by
the European Union

Digital Shaper Summit: The Grand Finale

The Digital Shaper Summit marked the conclusion of the 6-month program, bringing together over 100 participants, techies, mentors, partners and guests for a full day of project presentations, celebration and inspiration.

100+

Participants

3

Projects Presented

13

Speaker Roles

4

Participant Pitches



Project Showcases

3 selected cross-track teams presented their work to a live audience of 100+ participants, mentors and partners.

Celebration & Networking

Programme roles: 6 keynote/impulse talks, 5 panel speakers and 2 session moderators. The summit also included 2 alumni success stories and 4 participant pitches.



Funded by
the European Union



"To learn why and how to position own self with the help of AI was crucial"

"I enjoyed the networking opportunities"

"Speakers broke down their achievements into small and feasible steps and this increased my motivation to achieve more and unlock my full potential"

"Please organise similar events more often. The event was amazing!"



Funded by
the European Union



Thank You

We Build Digital Shapers 2025

A collaboration between TechLabs & WhomLab
Funded by the European Union

EU Project Reference: 2025-1-DE02-KA210-VET-000352493