Degree Companion: Web-Based Degree Progress Manager

Project Presentation

Information Architecture and Web Usability
Winter Term 2025/26

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Outline

- Motivation
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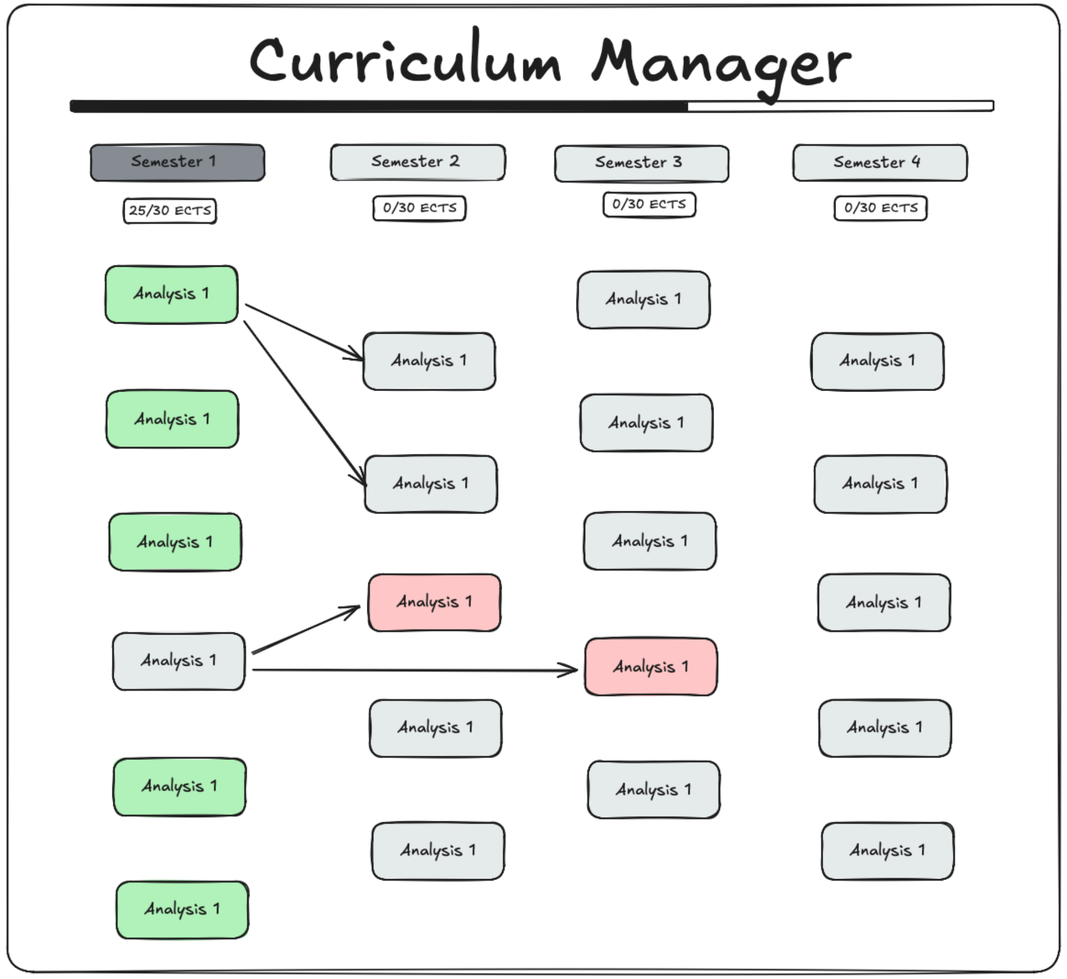
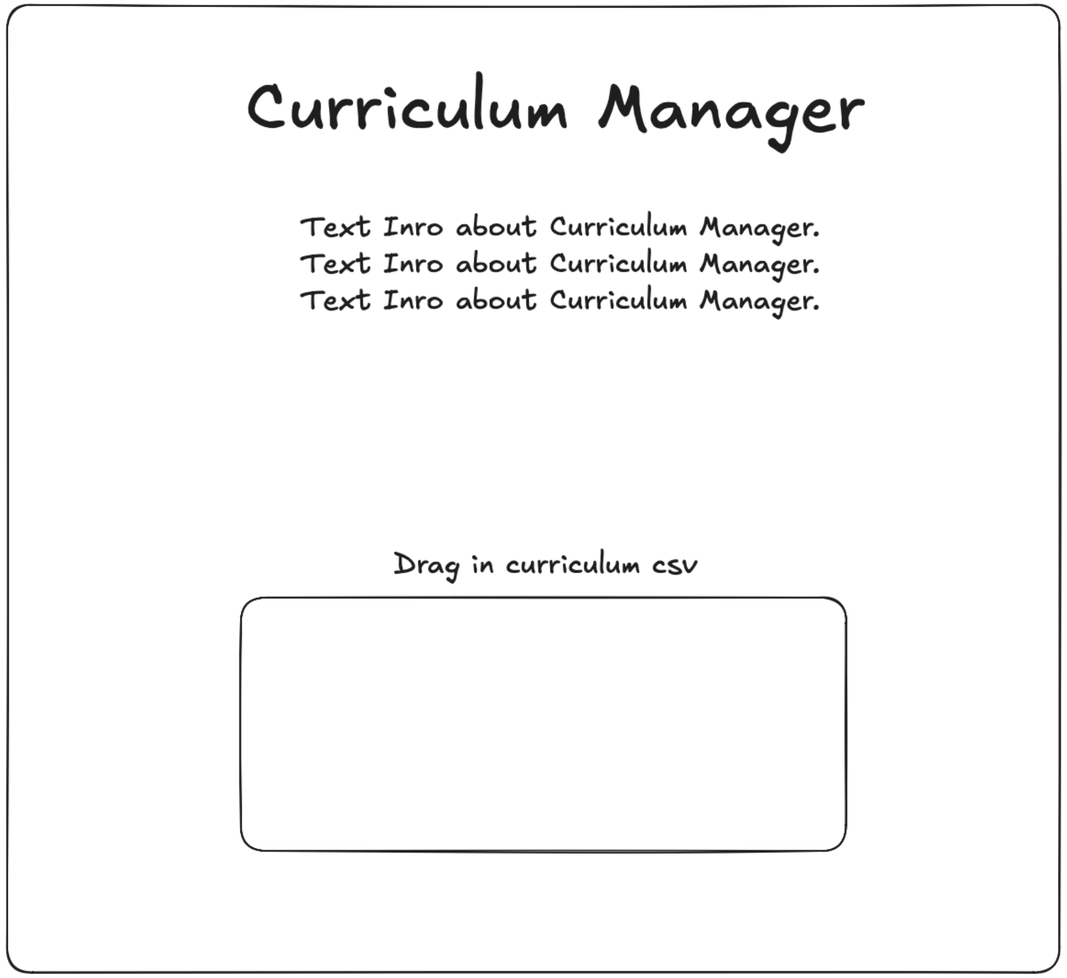
Motivation

- Hard to plan academic journey.
- Extensive freedom to choose modules and courses.
- Very many courses, with interconnected dependencies.
- Goal:
  - Increase student motivation and engagement.
  - Ensure structured and coherent learning path.
  - Reduce pitfalls and stressful times.

Design Sketch





Current State

- Mapped two study programs of Graz University of Technology:
  - Bachelor's Software Engineering and Management. [1]
  - Master’s Computer Science. [2]
- Load & Parse CSV dropped into application.
- Preview curriculum as raw table.
- Fill out onboarding form to provide additional information.
- Show initial course graph in recommended semesters with dependencies.
- Ability to add, remove and re-order courses.

[1] https://github.com/gugacs/degree-companion/blob/develop/data/curricula/tug-bsc-sem.csv

[2] https://github.com/gugacs/degree-companion/blob/develop/data/curricula/tug-msc-cs.csv

Data Format

- course_id: string | string[]
- course_name: string | string[]
- module_code: string | string[]
- module_name: string | string[]
- course_subcategory: string | string[]
- course_type: string | string[]
- credits: integer | integer[]
- required: integer | integer[]
- availability: string | string[]
- recommended_semester: integer | integer[]
- prerequisites: string | string[]
- frequency: string | string[]
- language: string | string[]
- description: string | string[]
- url: string | string[]

Example: IAWEB

- course_id: 706.041
- course_name: Information Architecture and Web Usability
- module_code: IVIS
- module_name: Interactive Visual and Information Systems
- course_subcategory: Mobile and Web Applications
- course_type: VU
- credits: 5
- required: 0
- availability: S
- recommended_semester: 0
- prerequisites: INH.02021UF
- frequency: yearly
- language: EN
- description: ...
- url: https://online.tugraz.at/iaweb

Example: HCI

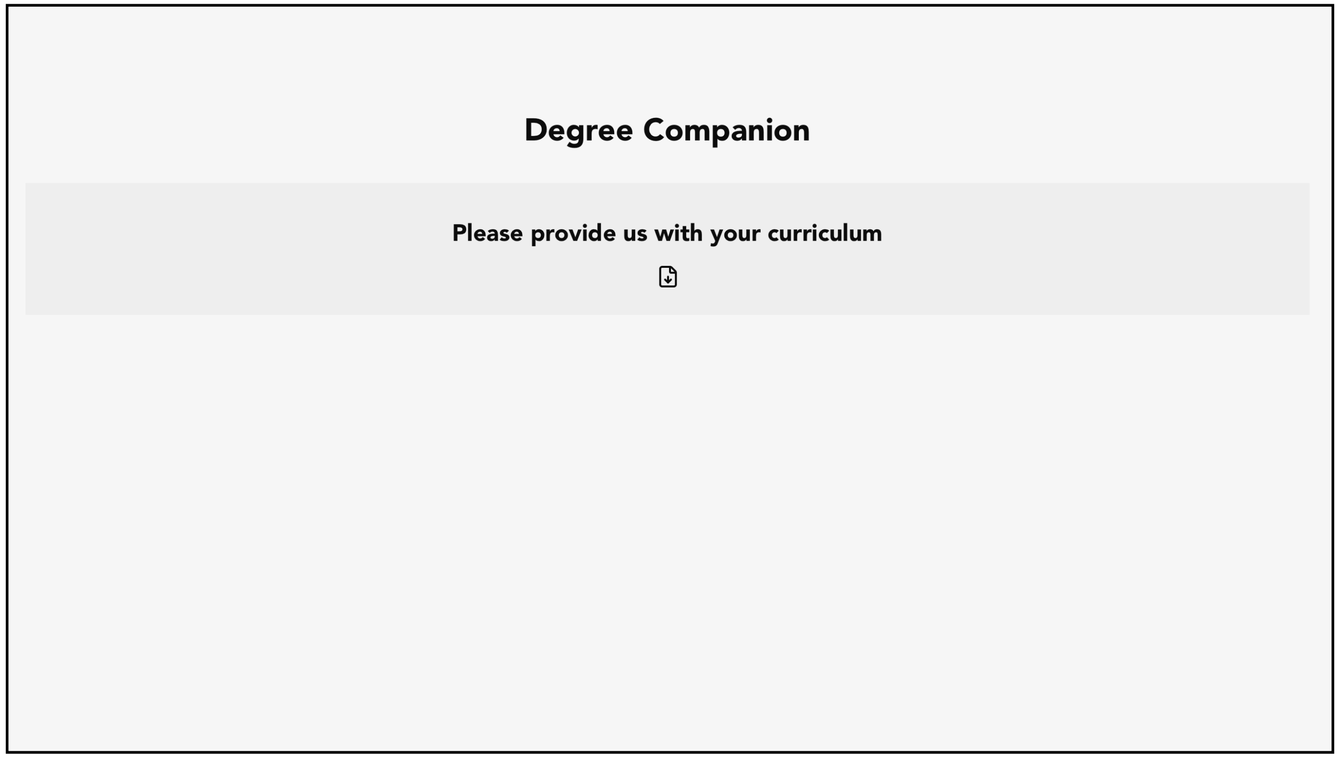
- course_id: INH.02021UF
- course_name: Human-Computer Interaction
- module_code: H
- module_name: Information Processing 2
- course_subcategory: None
- course_type: VU
- credits: 4.5
- required: 3
- availability: S
- recommended_semester: 4
- prerequisites: None
- frequency: yearly
- language: EN
- description: ...
- url: https://online.tugraz.at/hci

Steps Through The UI

- Step 1 - Upload Curriculum CSV
- Step 2 - Preview Curriculum Format
- Step 3 - Enter Additional Details
- Step 4 - Explore Curriculum Graph
- Step 5 - Update Degree Progression

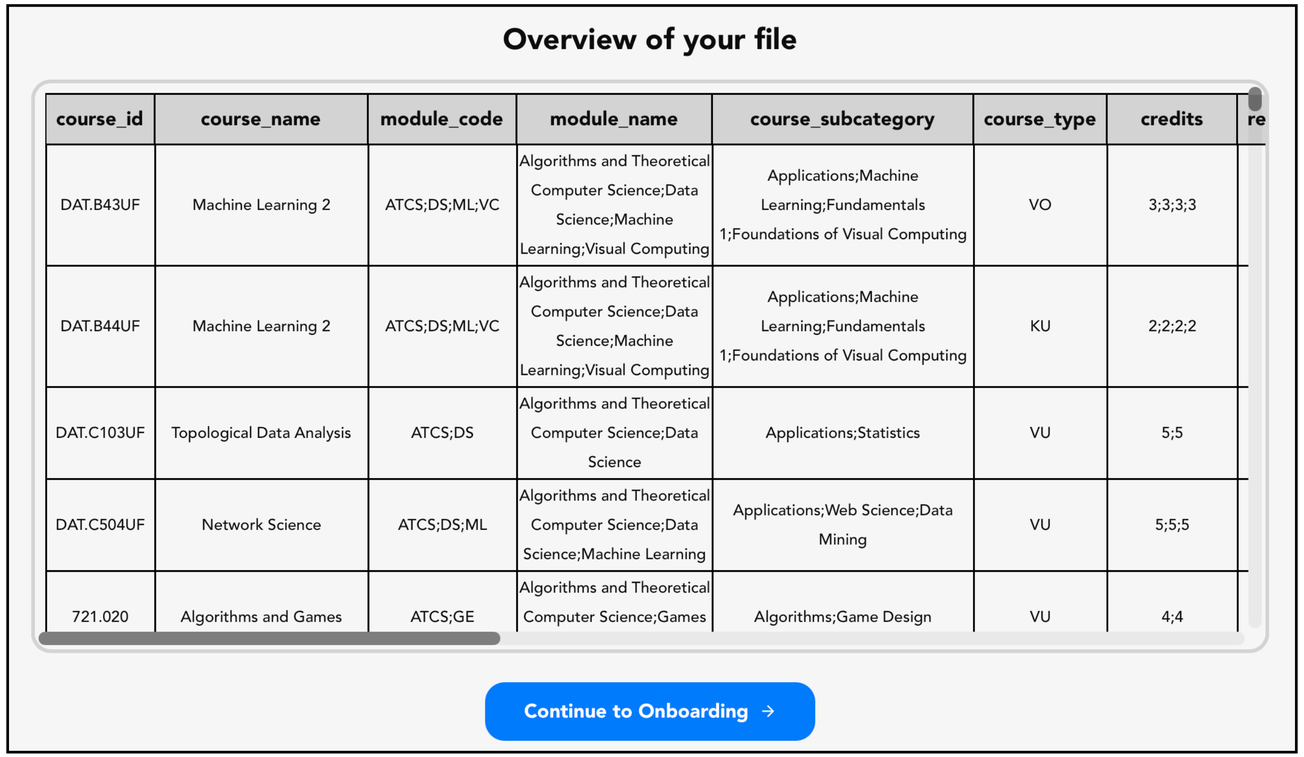
Step 1- Upload Curriculum CSV

- Drag and drop CSV into rectangular area.
- Automatically load and parse structure in the background.



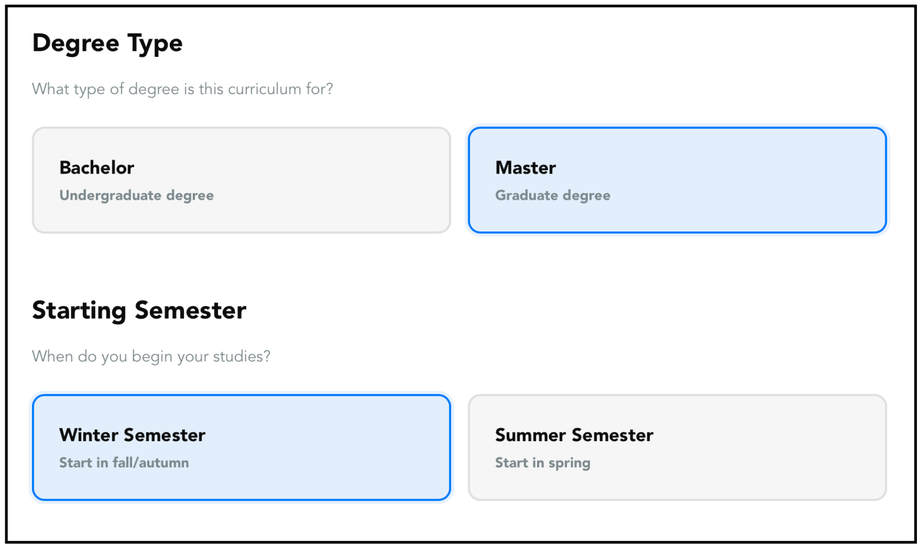
Step 2 - Preview Curriculum Format

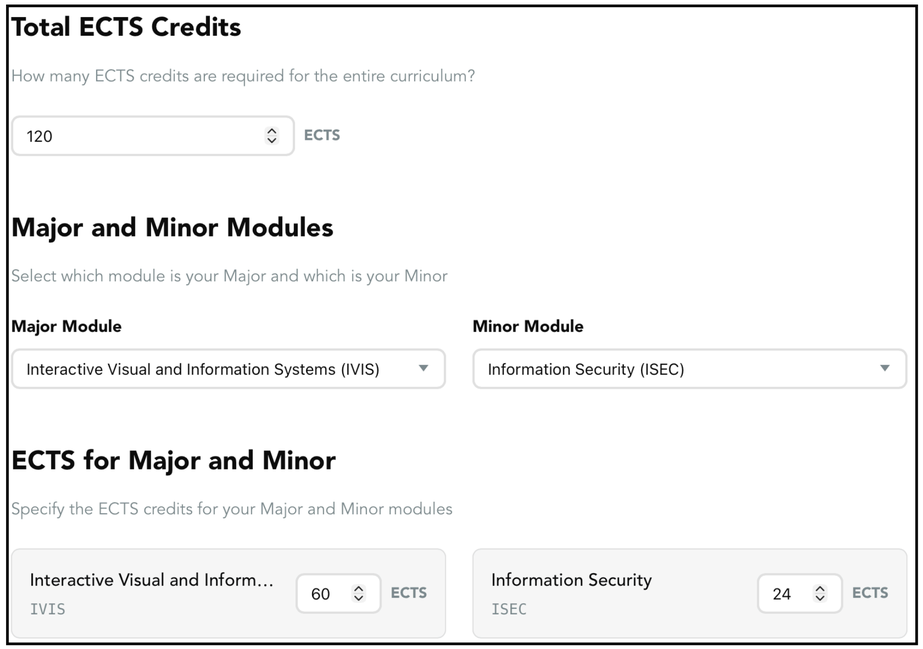
- Show user preview of the loaded curriculum to catch parsing mistakes.
- Re-upload updated file or continue.



Step 3 - Enter Additional Details

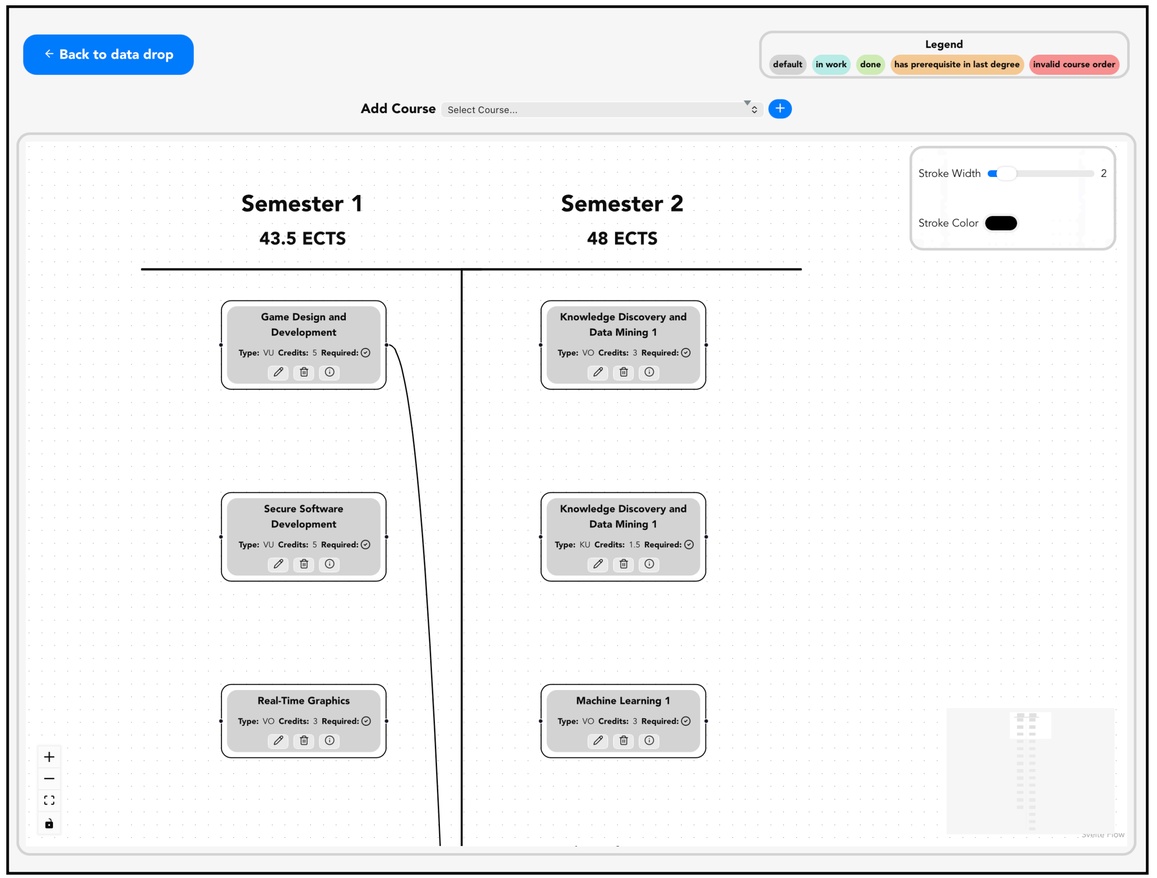
- Enter complementary information needed for better planning.
- Available options automatically filled in from loaded curriculum.





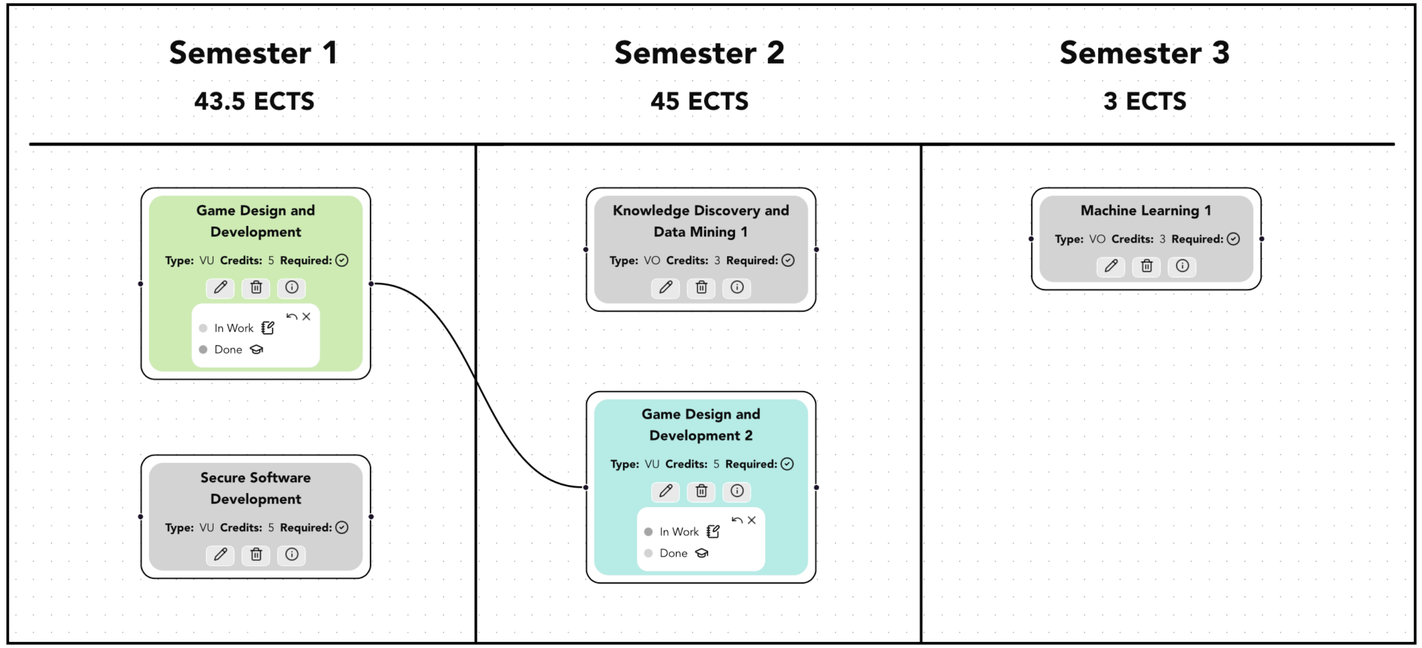
Step 4 - Explore Curriculum Graph

- Show overview of the curriculum (e.g., recommended courses).
- Explore available course options.

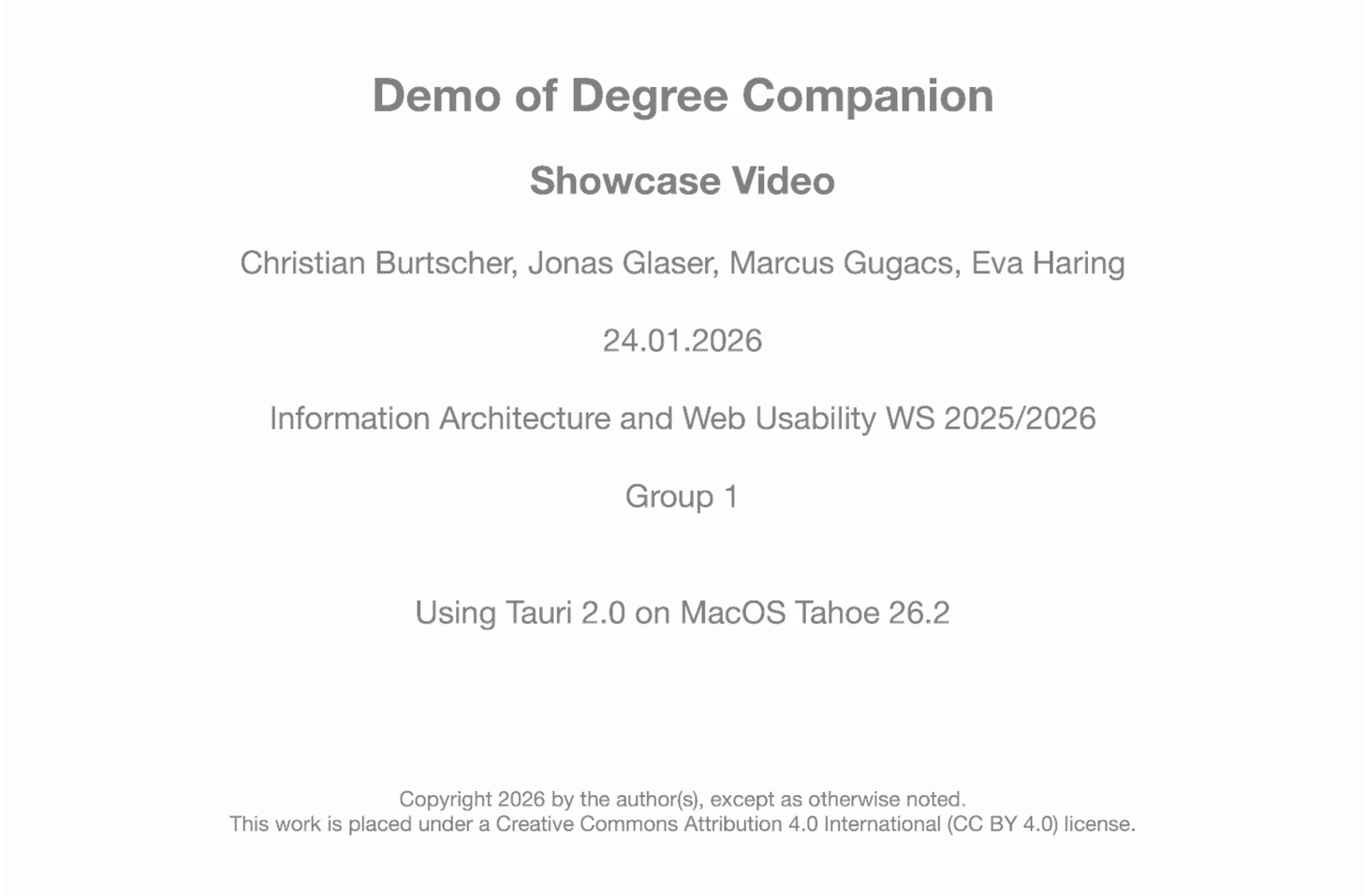


Step 5 - Update Degree Progression

- Modify progression state of individual courses.
- Move courses between semesters and create new ones.



Live Demo



Youtube: https://youtu.be/VCo_RC9fokQ

Github: https://github.com/gugacs/degree-companion

Live Preview: https://github.com/gugacs/degree-companion/releases

Future Work

- Extend onboarding to get supplementary information from user.
- Finish filtering and adjustments to graph based on onboarding.
- Improve workflow while organizing courses across semesters.
- Improve user guidance throughout the application.
- Test application on other curricula from other universities.
- Evaluate, gather and implement feedback from other students.

Conclusion

- Much work and brainpower went into planning.
- Hard to develop universal curriculum format.
- Complex application aiming to simplify planning problem.
- Hard to integrate vast feature set into usable application.
- Created comprehensive prototype with foundational functionality.
- Application can be downloaded and extended upon. [1]

[1] https://github.com/gugacs/degree-companion/

Questions?