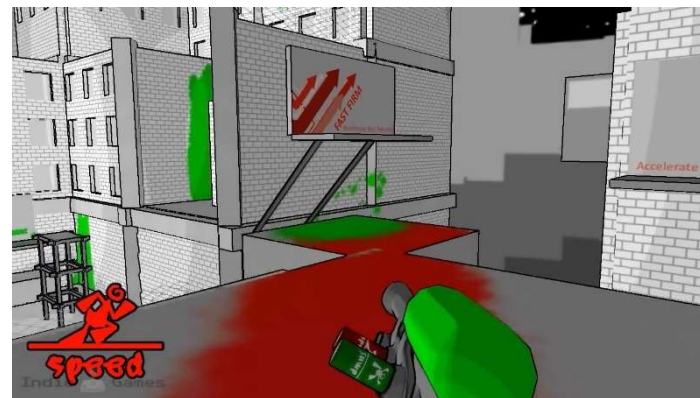# Spieleentwicklung

Spiele 3D

Goal of the lecture

- A working **game**

- For you to understand concepts
  - 3d computer graphics (Rendering Pipeline, Cameras, …)
  - Software engineering (SCRUM, …)

Approach – SCRUM

- Why?
    - Adaptable to changing targets
    - Introduce some organization – but little overhead
- Recitation
    - https://www.video2brain.com/de/videotraining/agile-softwareentwicklung-mit-scrum
        - Complete course (3h34)
- Product backlog (prioritized todo list)
- (Very short) meetings
- Sprints (implementation cycle)

Todo

- Form mixed(AI/MD) teams of 1-5 person(s)

- Design and implement a 3D game
  - Work in SCRUM teams
  - Team/tutor meetings

- 4 reviewed project progress presentations

- < 1 minute let's play video

Project: 3D game

- Examples
- If existing game → introduce a twist
    - No exact copies allowed!
- On one finished level that shows all features

Unity 3D game engine

- Dominant game engine (45%)
- Can do much without extensive programming
- Many resources online – look them up!
- Tutors will give case study talks

Unity 3D unity3d.com/learn/tutorials

TOPICS

Interface & Essentials (22)	2D Game Creation (26)
Scripting (76)	Best Practices (12)
Graphics (43)	Physics (27)
Audio (12)	Animation (18)
User Interface (UI) (31)	Mobile & Touch (6)
Navigation (7)	Tips (19)
Ads & Analytics (9)	Virtual Reality (8)
Multiplayer Networking (18)	

Unity 3D unity3d.com/learn/tutorials

PROJECTS

Roll-a-ball tutorial (9)
New? Start here.

Space Shooter tutorial (19)
Blast some Asteroids!

Survival Shooter tutorial (12)
They mostly come at night..

Tanks tutorial (8)
2-players, 1 keyboard, Tank vs Tank.

2D Roguelike tutorial (14)
Procedural level Survive-em-up!

Procedural Cave Generation tutorial (9)
Let's get spelunking.

2D UFO Tutorial (9)
New? Want to make 2D games? Start here.

Let's Try Assignments (12)
Learn to create single game mechanics.

Grading

- Outcome at presentations

- Active participation at meetings with tutors

- Time spent on project

- Team gets one grade
  - Optional: team members distribute different grades within team

Lecture Content

- Game concept and design

- 3D graphics (engine internals)

    - Rendering Pipeline

    - Visibility

    - Geometry and transformations

    - Cameras

    - Lighting

    - Texturing

    - Physics and animation

- Collision Detection

- Games programing ☺

LVA structure

	Month 1					Month 2				Month 3			Month 4		
Lecture	T C T C	T	C T	C T C	T C	T C	T C T	C	T C T C	T C T	C T	C	T C T	C T	C T	C
Project	S		S	S		S	S		S	S			S		S	
Talks		P		P							P					P

T... theory, programming examples

C... coaching/meetings (tutors/myself)

S... sprints (2 week sprints) ~ 7 sprints total

P... project progress presentations (graded)

Both in T111/G001

LVA structure

- 12.10.: Presentation game concept
- 26.10.: Presentation prototype
- 21.12.: Presentation game play implemented
- 25.01.: Presentation "final" game (+let's play video)
- Each time feedback of tutor/me afterwards

Moodle

- Deliverable/project upload
- Forums for questions
- Slides
- Examples
- …

Resources

- portal.hs-weingarten.de/web/scherzer/links
  - Some links on games and computer graphics