科目ナンバリング	U-LAS70 10002 SE50						
授業科目名<英訳>	ILAS Seminar-E2 :Let's simulate human movement（コンピューターで人を動かしてみよう） ILAS Seminar-E2 :Let's simulate human movement			担当者所属職名・氏名	医学研究科　准教授　PATAKY，Todd		
群	少人数群	単位数	2単位	週コマ数	1コマ	授業形態	ゼミナール（対面授業科目）
開講年度・開講期	2026・後期	受講定員(1回生定員)	15 (10) 人	配当学年	主として1回生	対象学生	全学向
曜時限	金5	教室	医学部人間健康科学科第3講義室 (医・薬・病院構内)			使用言語	英語
キーワード	3D modeling / computer animation / kinematics / character creation / biomechanics						

[授業の概要・目的]

Computer animations of human movement help (a) clinicians understand movement disorders, (b) doctors make corrective surgery decisions, and (c) engineers design artificial limbs. This course will introduce you to human movement simulation from the perspectives of animation and motion capture. A variety of movements will be considered, ranging from simple single-segment motion to complex, natural 3D motion. We will use the free-and-open-source software "Blender" to create animations of human movement. As a final project, students will generate a short animated movie, using animated movement to tell a story. Programming experience is useful but not required.

[到達目標]

Students will learn about human modeling, animation and simulation. Students will also learn the fundamentals of motion capture, and how motion capture data can be used to drive the motion of 3D human models. In two classes students will work hands-on with expensive, Hollywood-grade motion capture equipment to support animation work. You will gain experience using open-source software, working in 3D software environments, and in planning and managing a relatively complex software project.

After some initial general assignments, focus will shift to Final Projects, which students will work on for most of the semester. The goal of Final Project is to create a short animation of human movement. The animation theme and specific techniques are free, to be be chosen by each student based on your interests. The instructor will help students to choose a Final Project that is challenging, but also achievable. The instructor will also help you solve Final Project modeling and animation problems as you encounter them.

[授業計画と内容]

The following weekly topics will be covered:

1) Modeling I: Geometry Fundamentals
2) Animation I: Keyframe Fundamentals
3) Modeling II: Armatures & Skins
4) Modeling III: Character Meshes
5) Animation II: Actions & Nonlinear Animation
6) Presentations I: Initial Ideas
7) Modeling IV: Images, Videos & Sounds
8) Motion Capture I: Experiment I
9) Motion Capture II: Using Data in Blender

ILAS Seminar-E2 :Let's simulate human movement（コンピューターで人を動かしてみよう）(2)へ続く↓↓↓

10) Motion Capture III: Experiment II
11) Presentations II: Progress Report
12) Animation III: Fine Tuning
13) Animation IV: Advanced Topics
14) Presentations III: Final Projects
15) Feedback

Total: 14 seminars + 1 feedback week

[履修要件]

There are no specific requirements for this class. However, students must be willing to work with open-source software, which is relatively poorly documented compared to commercial software. The class instructor will help with problems, but students are also encouraged to find solutions to their problems through internet searches.

[成績評価の方法・観点]

Students are expected to actively participate in class, to reproduce all examples discussed in class, and also to complete regular assignments.

Evaluation will be based on the following criteria:

- Assignments (70%) [10 @ 7% each]
- Final Project (30%)

TOTAL: 100%

[教科書]

使用しない

No specific textbook will be used. All necessary materials will be distributed electronically and will be discussed in class.

[参考書等]

（参考書）

A number of useful books and internet resources will be discussed for student self-learning.

（関連ＵＲＬ）

http://www.blender.org(Blender is a free-and-open-source 3D modeling and animation software suite that will be used extensively in all lectures and all assignments.)

[授業外学修（予習・復習）等]

This course has a variety of out-of-class assignments (and no exam). Students who do not pay attention to the lecture content during class will likely have difficulties completing the assignments.

Additionally, there will be a Final Project that students are expected to complete outside of class, with in-class support.

[その他（オフィスアワー等）]

REASONS FOR CLASS SIZE RESTRICTION:
This class extensively uses Blender (blender.org), which is a very powerful, and very complex software

ILAS Seminar-E2 :Let's simulate human movement（コンピューターで人を動かしてみよう）(3)へ続く↓↓↓

package. Every class requires one-on-one student support to understand and handle software problems that arise. A larger class size is not feasible.

IN-CLASS ENVIRONMENT
This is a small seminar class, and active discussion is encouraged. Students are also encouraged to ask questions, both of the instructor and of fellow students. We are all here to learn, so let’s work together to create the best results we can!

OFFICE HOURS:
Immediately before / after class or by appointment (pataky.todd.2m @ kyoto-u.ac.jp)

[主要授業科目（学部・学科名）]