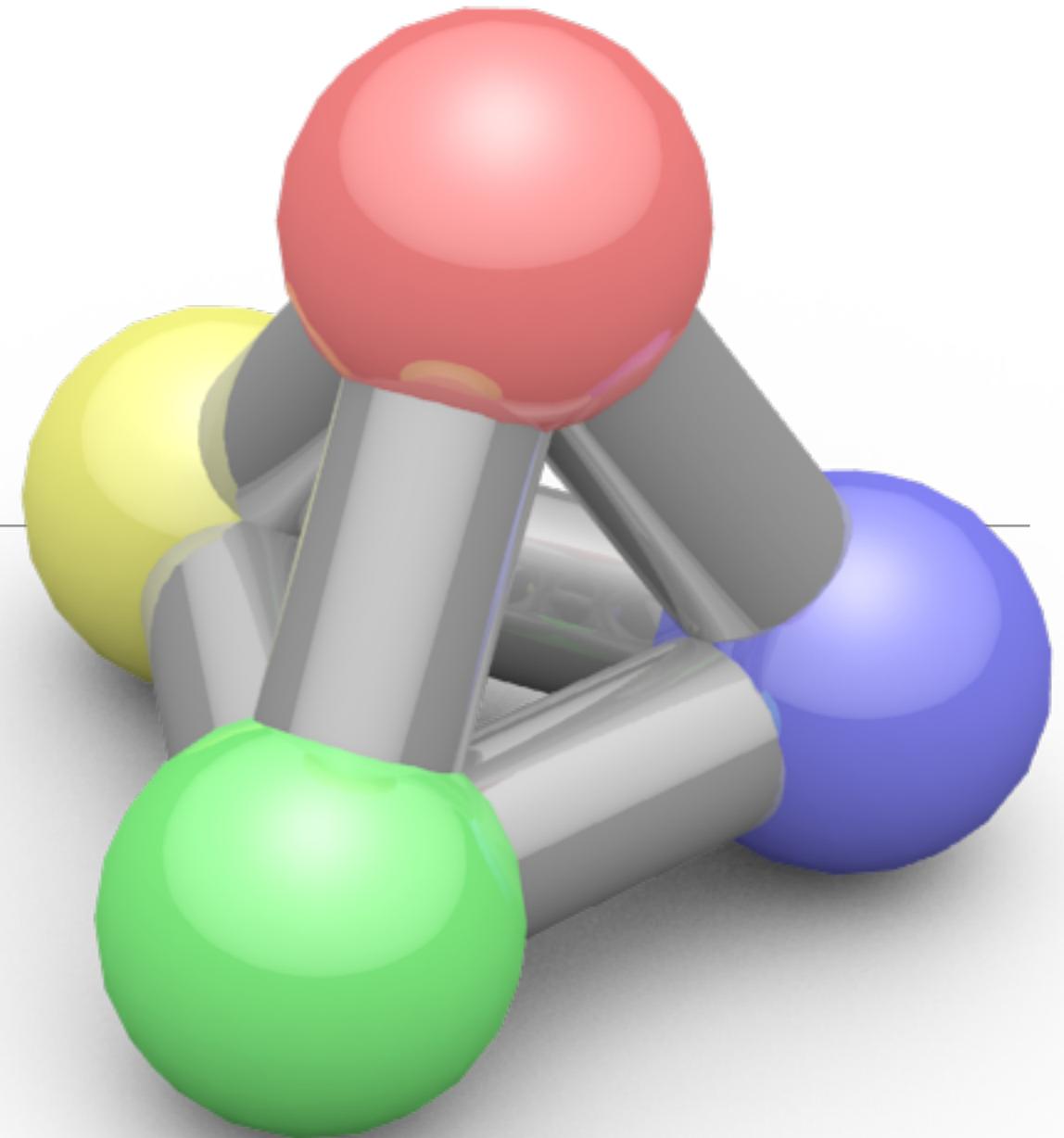


Introduction to Computer Graphics

CPSC 453 – Fall 2016

Sonny Chan



Your Professor

- Dr. Sonny Chan
 - sonny.chan@ucalgary.ca
- Office:
 - MS 634 (and HRIC 1C56)
 - Mon/Thu @ 10:00



Your Teaching Assistants



Lee Ringham (MS 631)



Kamyar Allahverdi (MS 619)



Jeremy Hart (MS 631)

Outline for Today

- Definition of computer graphics
- Applications of computer graphics
- Course overview
- Course logistics

**What is
computer graphics?**

The discipline concerned with generating or manipulating visual imagery using computational devices and methods.

“What you need to show other people
your dreams.”

-Ken Perlin

What are some of its
applications?



Jurassic Park, 1993
Universal Pictures



Jurassic World, 2015
Universal Pictures



Beauty and the Beast, 1991
Walt Disney Animation Studios



Inside Out, 2015
Pixar / Walt Disney



Spacewar, 1962
Steve Russell, MIT



Assassin's Creed Unity, 2014
Ubisoft Montreal



Mission Rehearsal, ca. 1900s
United States Army

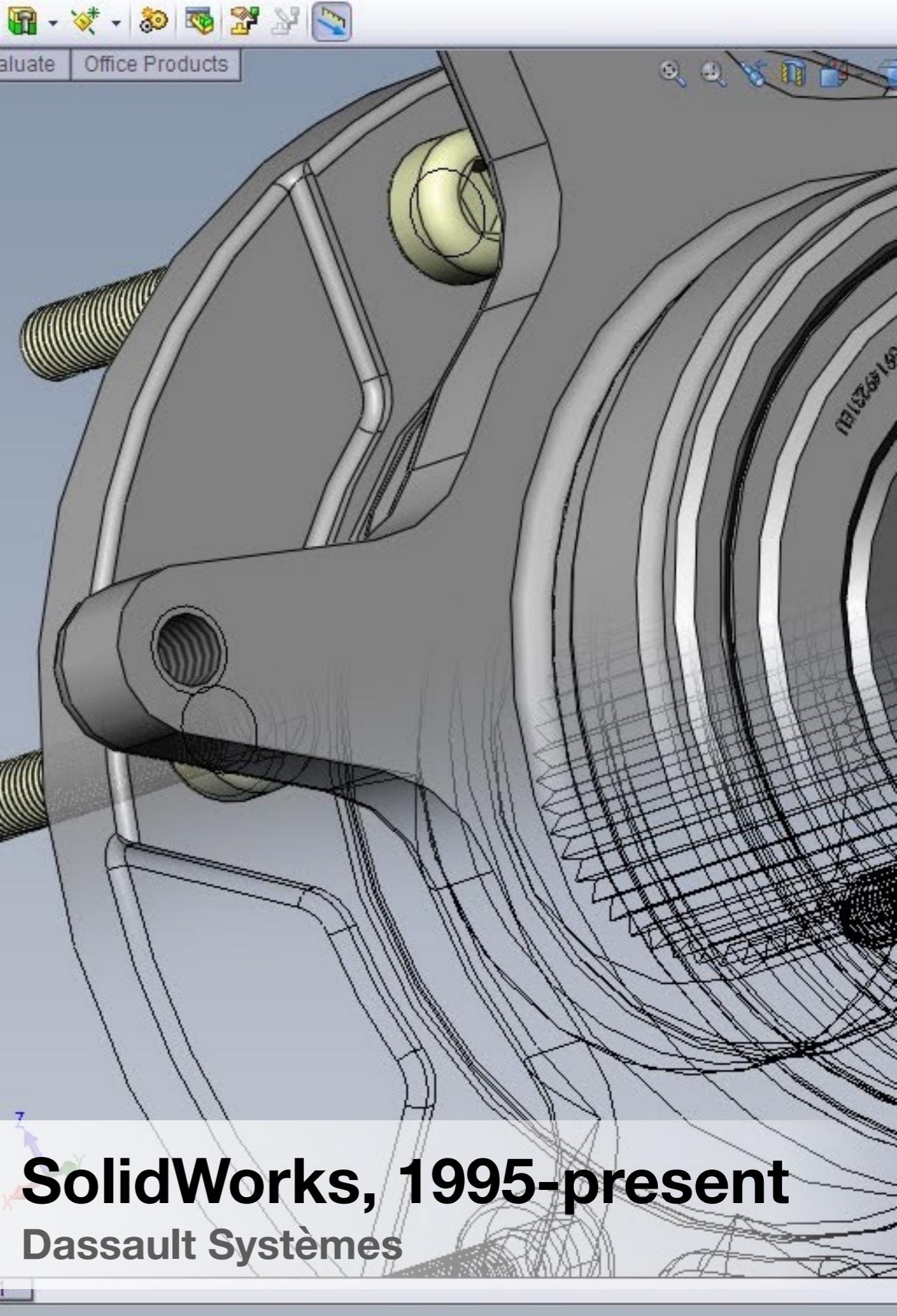


America's Army, 2002-2013
United States Army



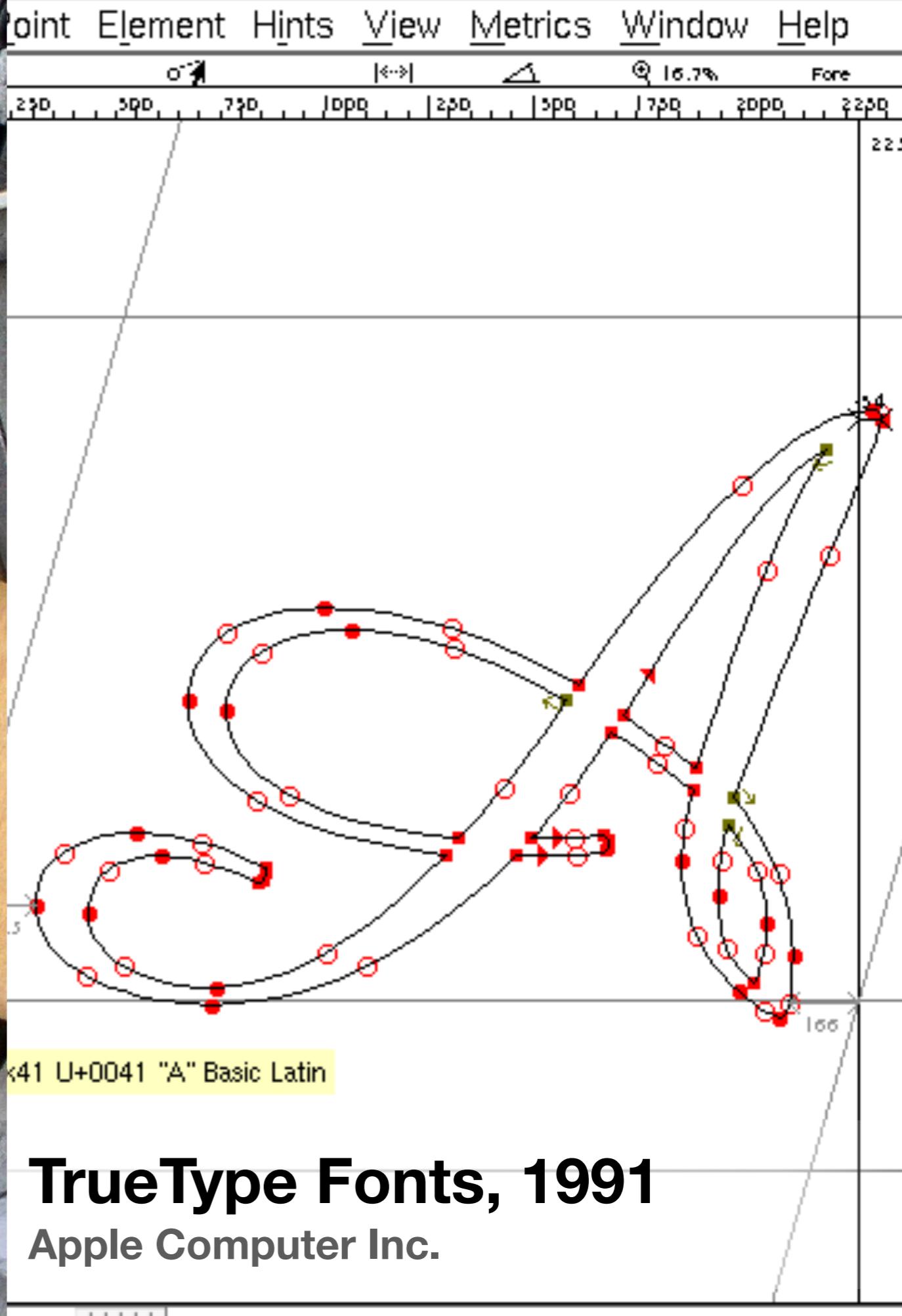
Spline Ducks, ca. 1700s

Drafting tools for shipbuilding

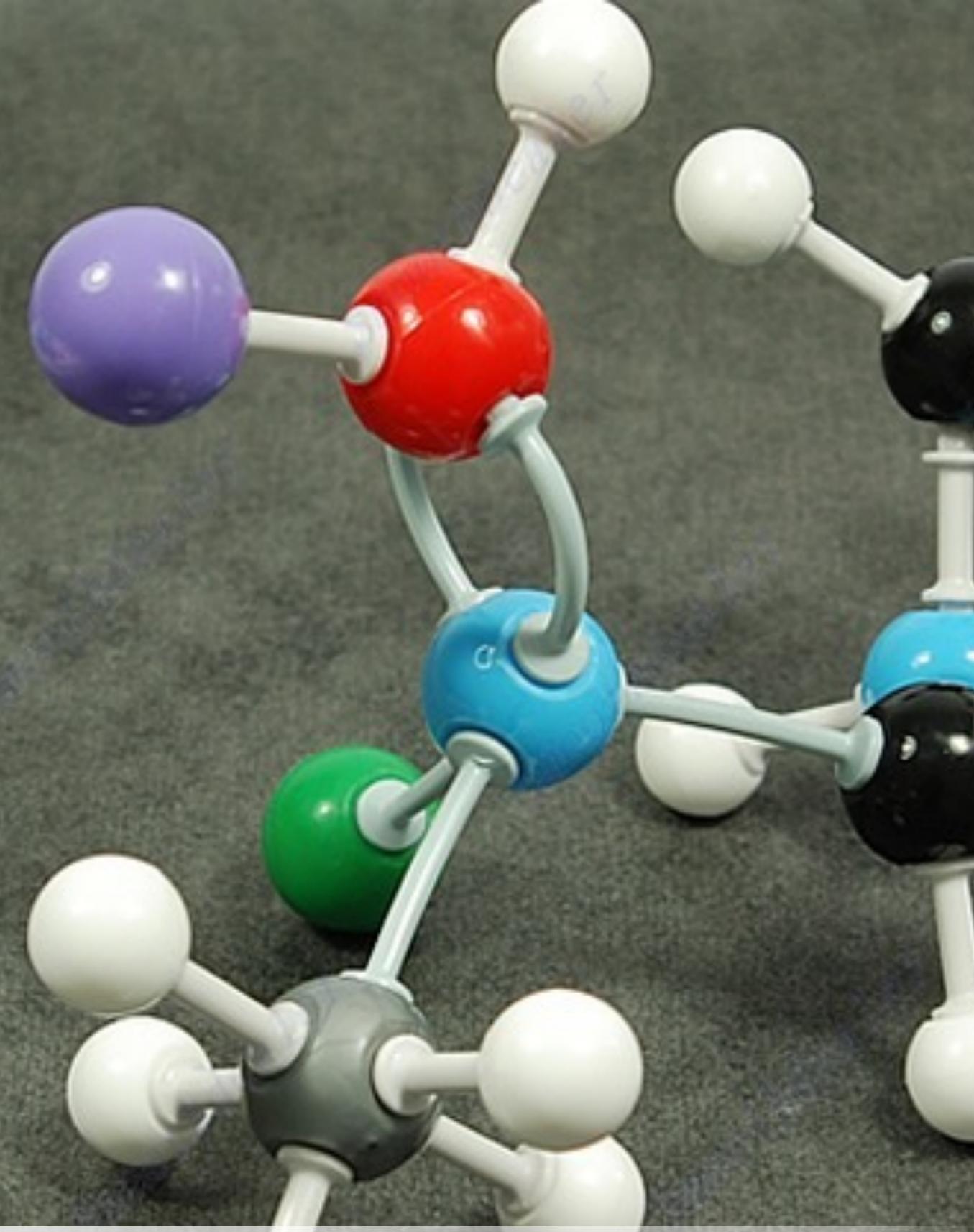




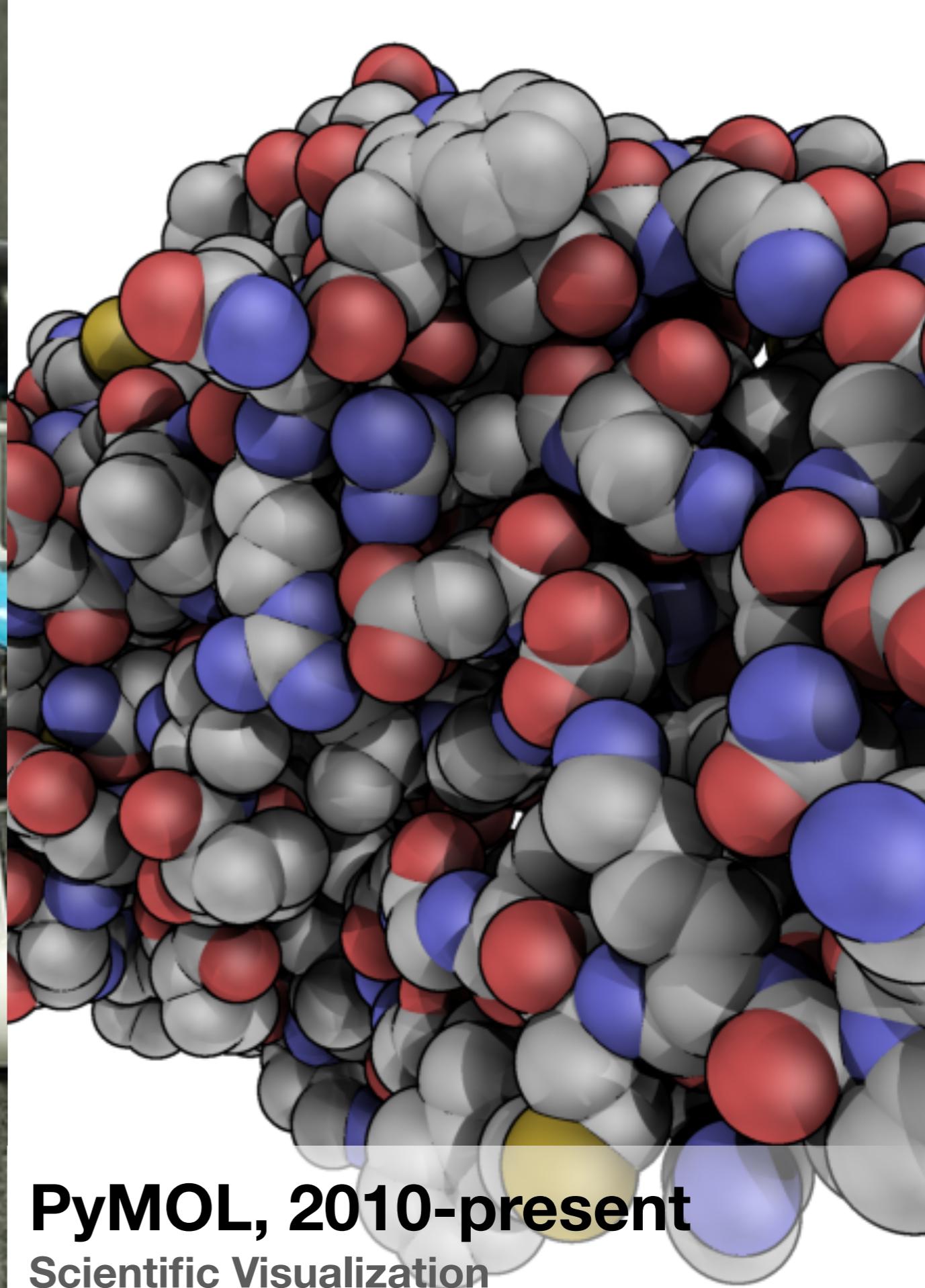
Movable Type, ca. 1400s
Johannes Gutenberg



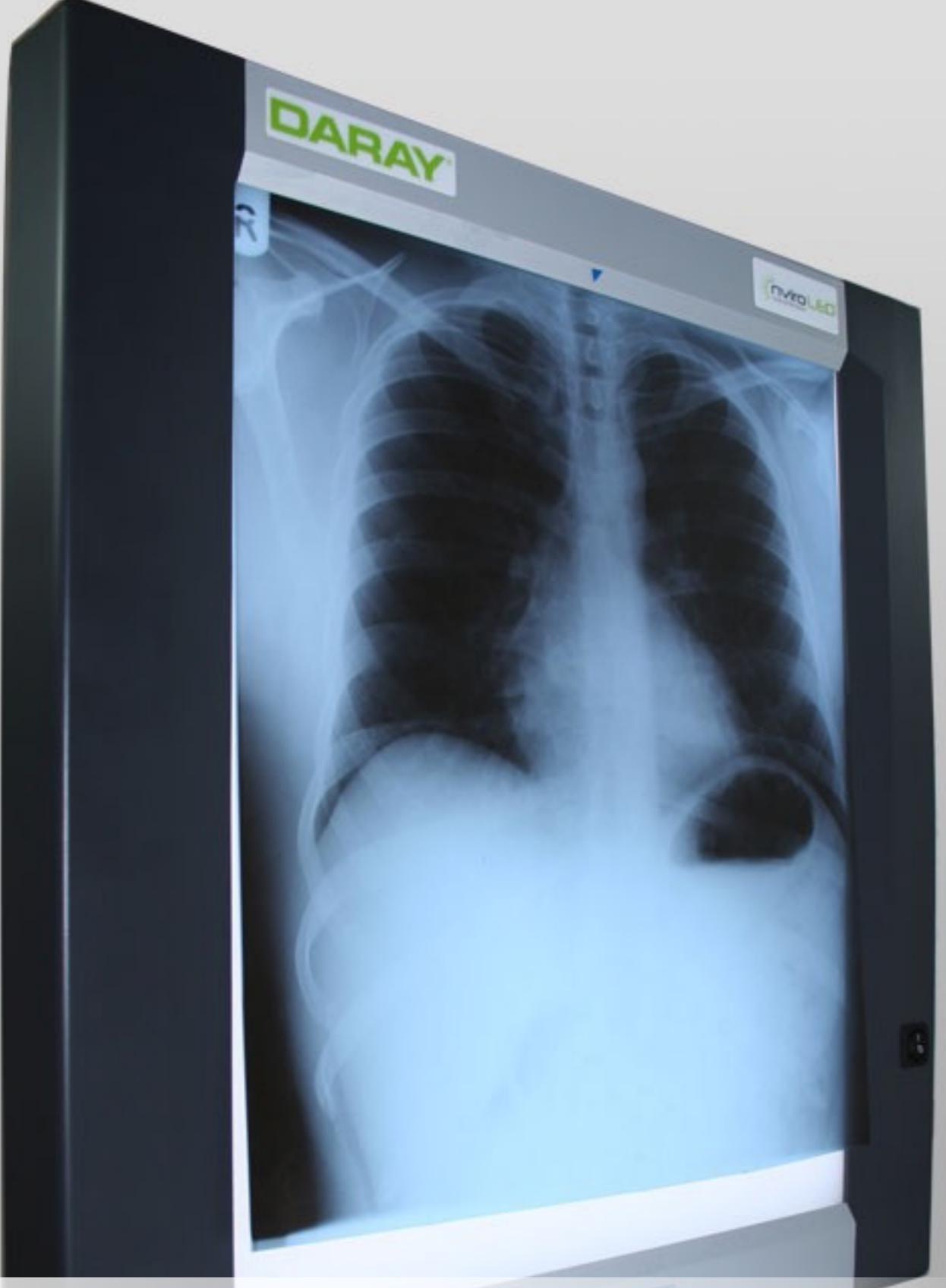
TrueType Fonts, 1991
Apple Computer Inc.



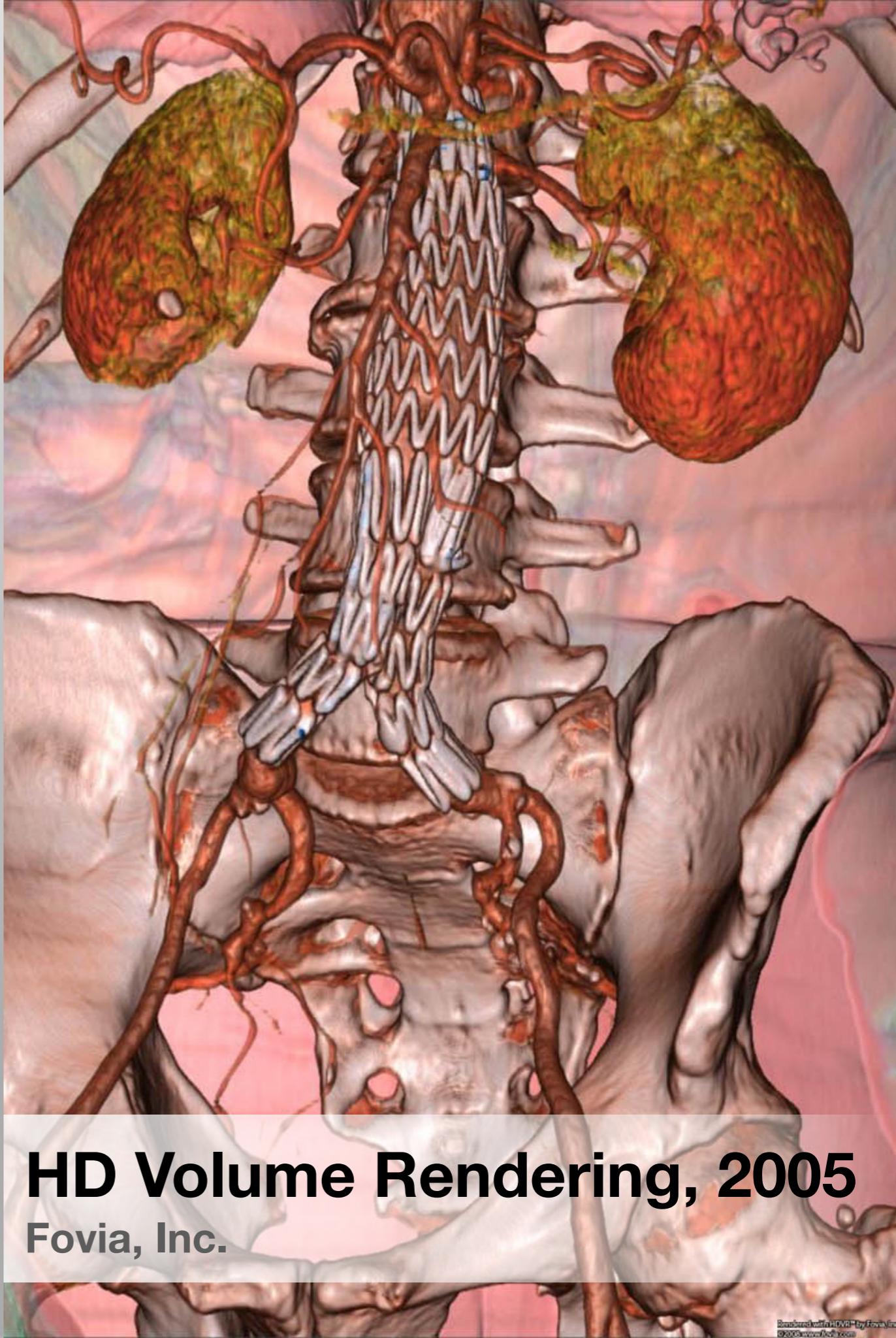
Molecule Set, ca. 1900s
Chemistry Education



PyMOL, 2010-present
Scientific Visualization



X-rays, 1930s-present
Medical Diagnosis



HD Volume Rendering, 2005
Fovia, Inc.



Digital Photograph
(Despina Vandi)



Photoshop, 1988-present
Adobe Systems



Sketchpad, 1965
Ivan Sutherland, MIT



iOS, 2007-present
Apple Inc.

Course Overview

CPSC 453 - Winter 2016



Combines Disciplines

We'll learn a lot of different things

Human Perception

Aesthetics

Mathematics

Physics

Computer Science

Many Topics

We'll survey a bunch in this course

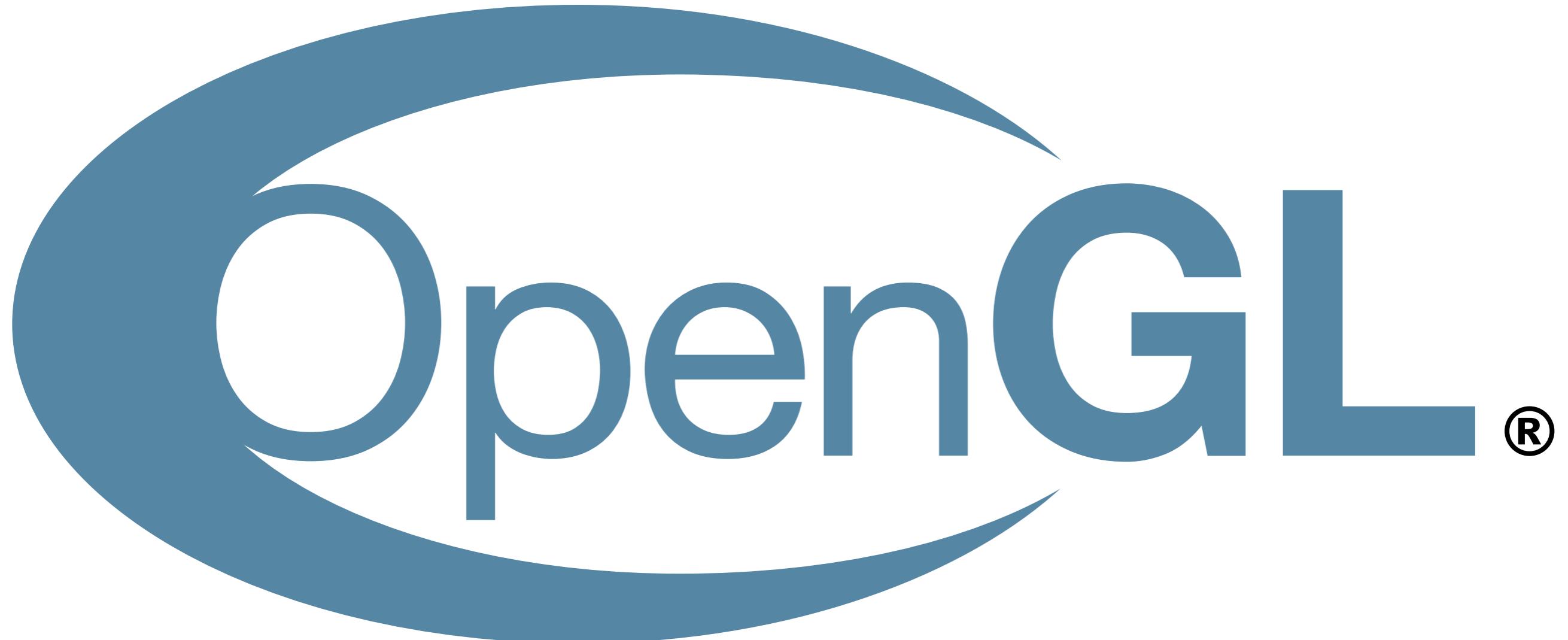
Light & Colour

Digital Imaging

Geometry

Textures & Materials

Graphics Systems

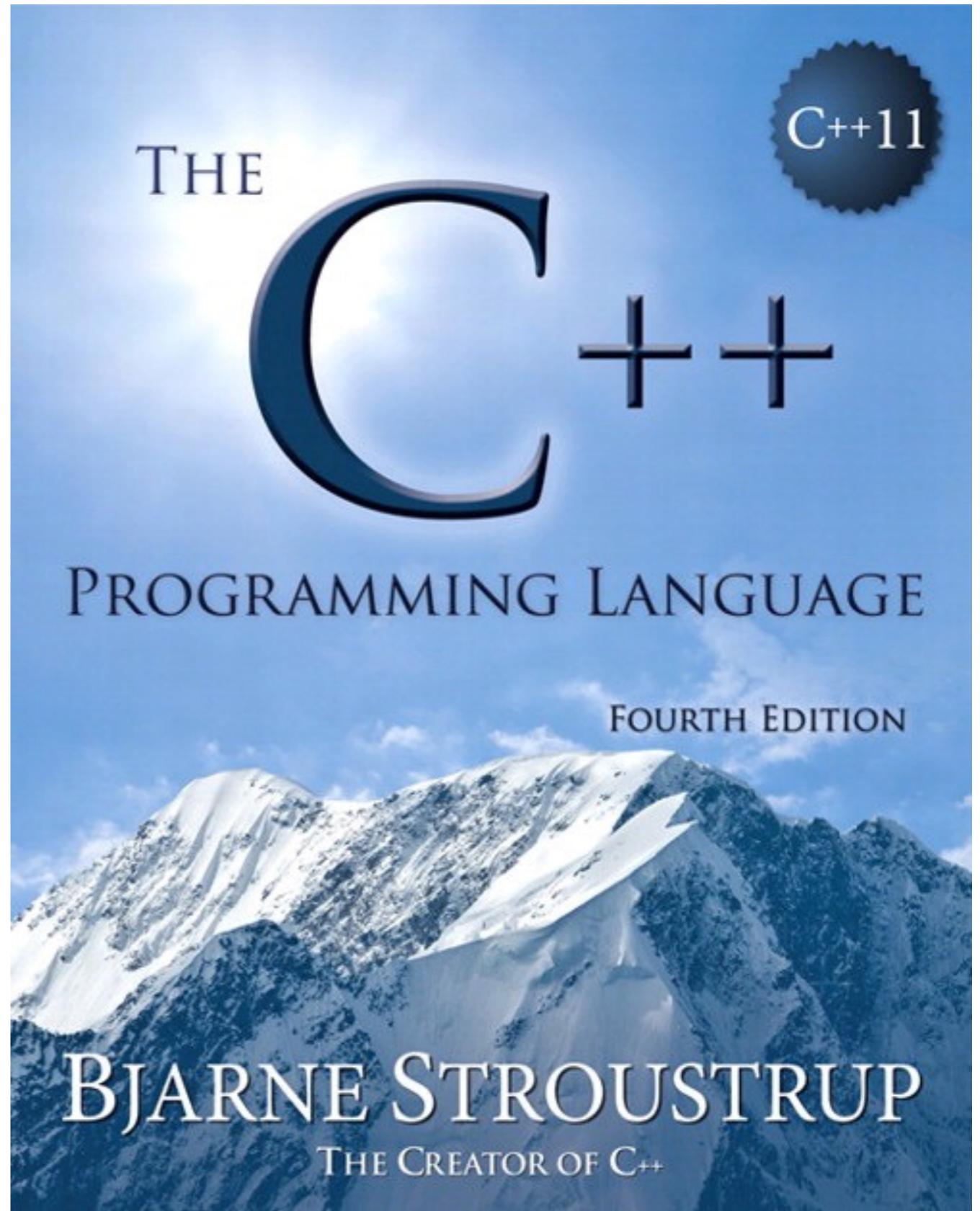


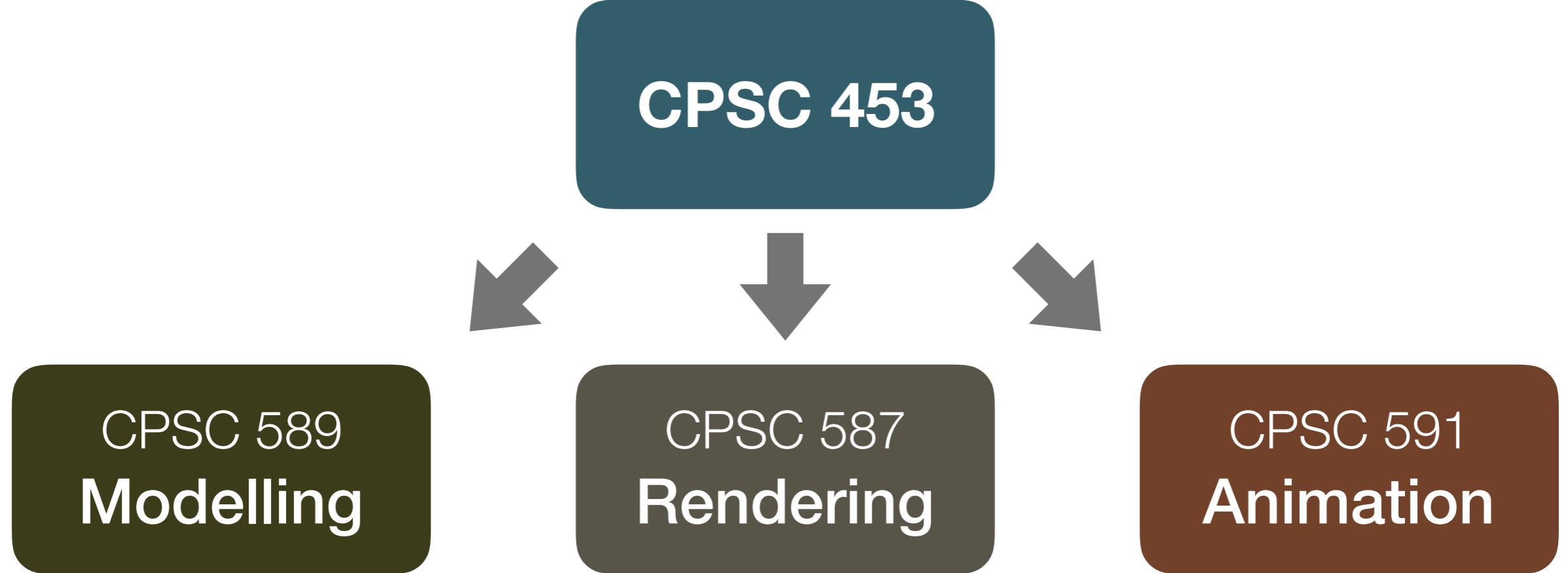
It's just a tool...

and not the focus of this course

Programming in C++

New to you? TAs will support you.



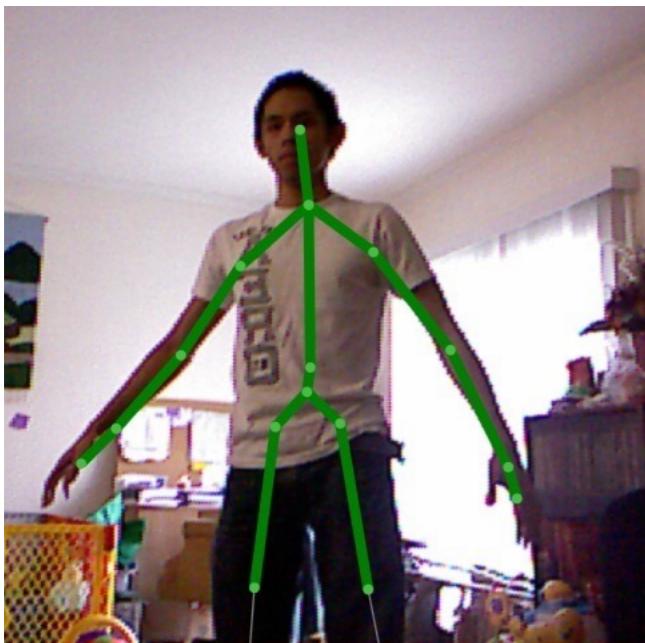


CPSC 453

**CPSC 535
Vision**

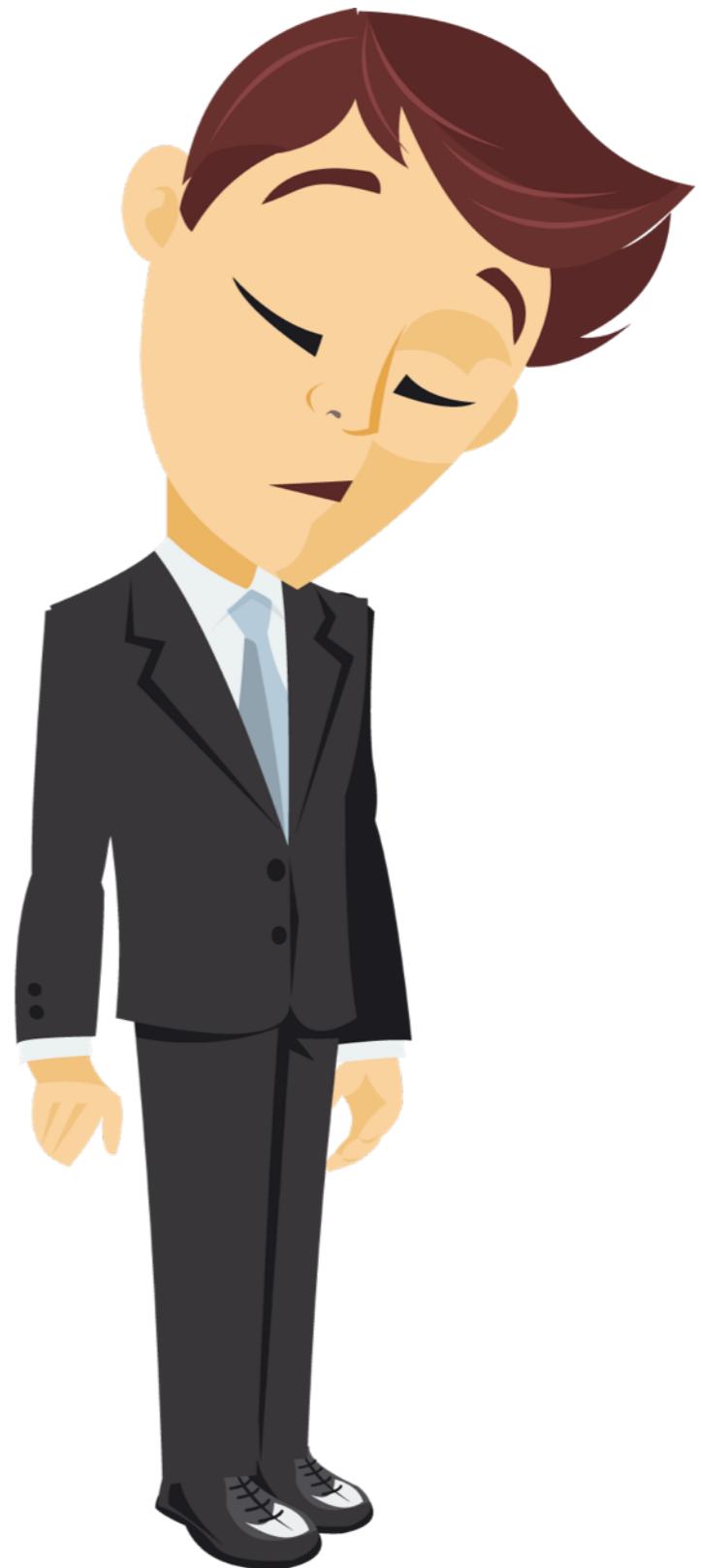
**CPSC 585
Games**

**CPSC 599.86
Haptics**



Course Logistics

And now the boring stuff...



Our home base

- Course web site:
 - <http://cpsc.ucalgary.ca/~sonny.chan/cpsc453>
 - Schedule, lecture slides, assignments, references...
- UofC Desire2Learn page:
 - Course work submission, grades

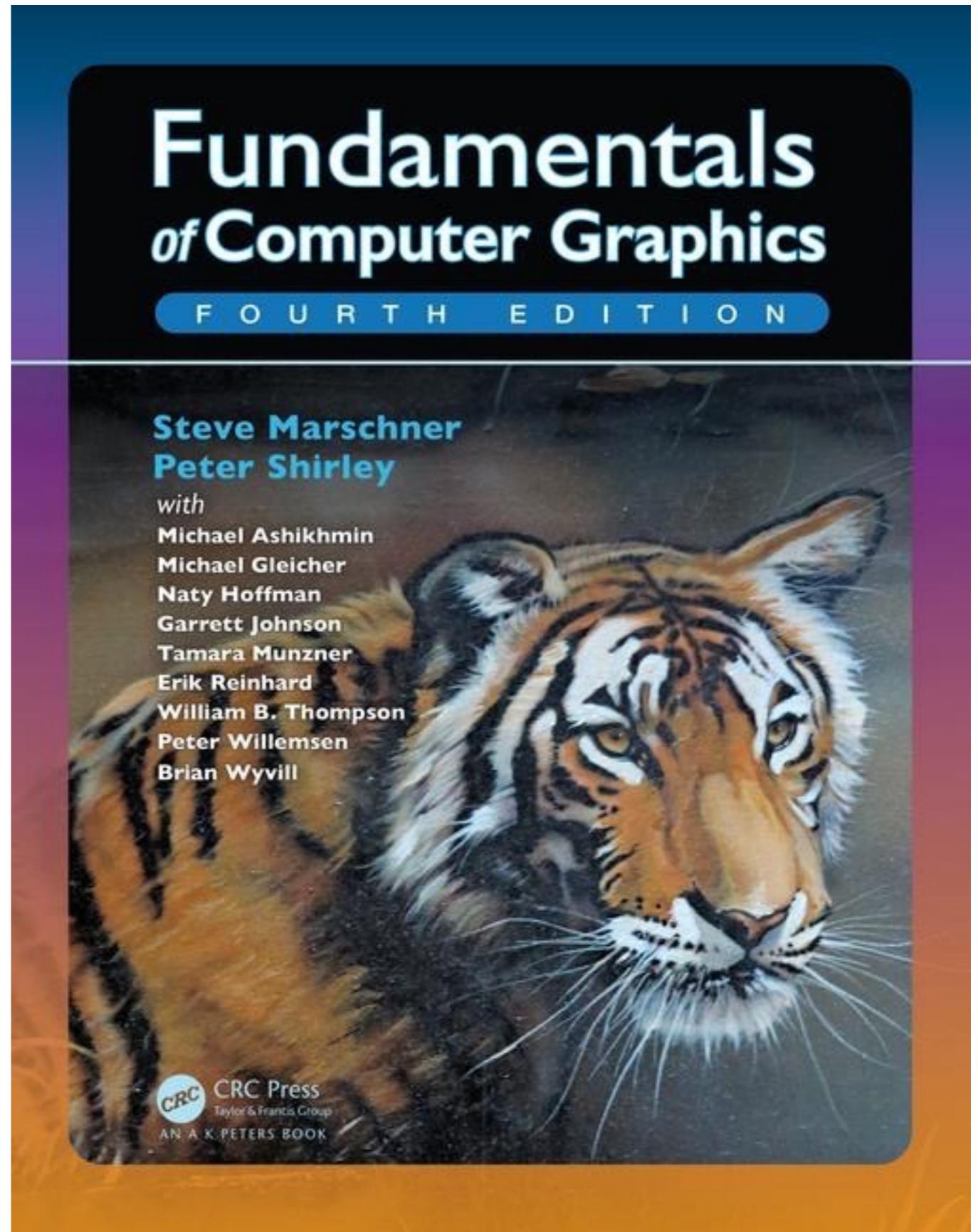
Join us on

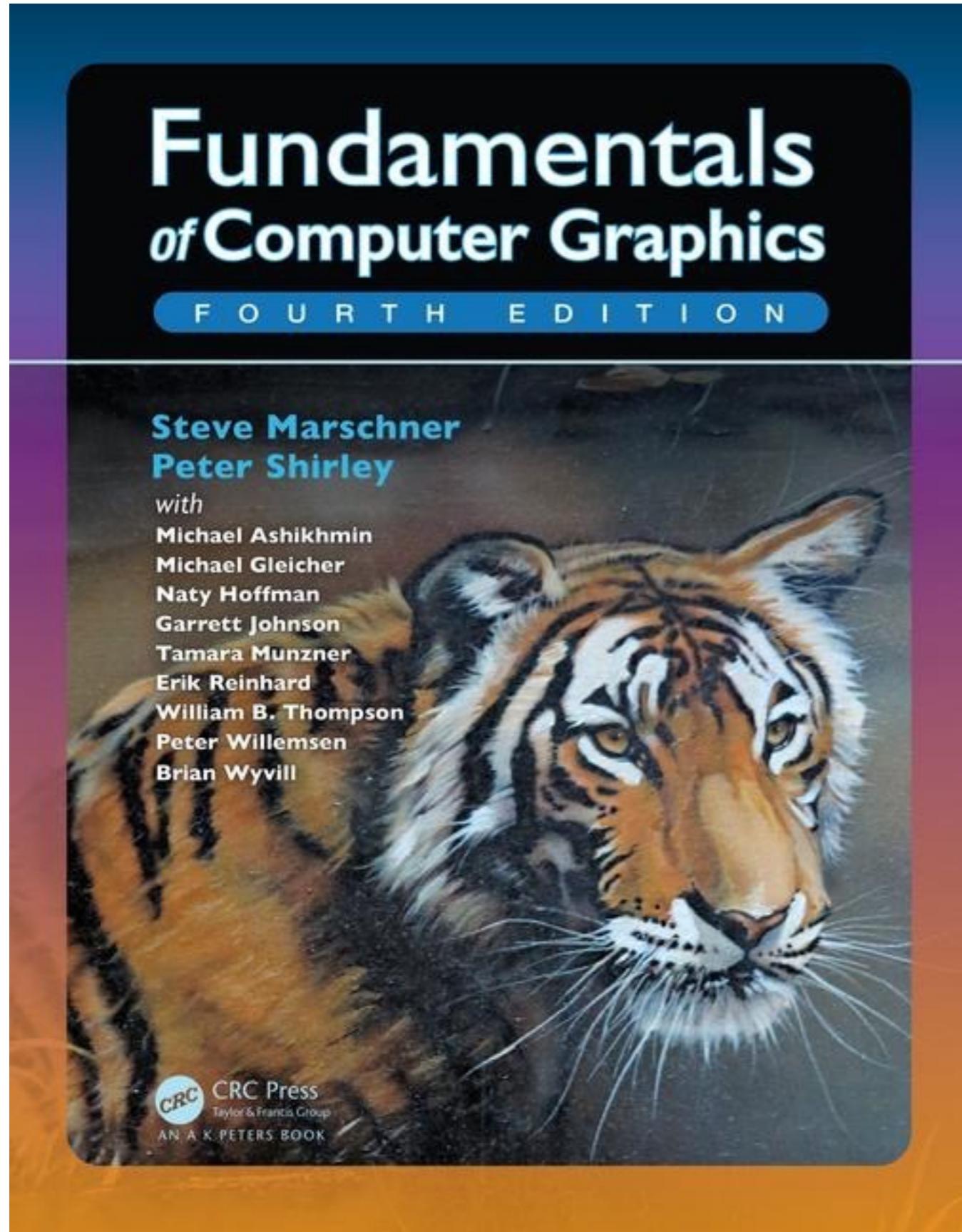


<http://piazza.com/ucalgary.ca/fall2016/cpsc453>

Course Text

- Published this year!
- 4th ed. is full colour
- I will assign readings
 - not sequentially though
- Not 100% necessary to pass this course, but do buy it!





Caltech

Cornell

Stanford

UBC

UC Berkeley

Grading

- 50% - Assignments
- 15% - Midterm (in class Wednesday, November 2nd)
- 35% - Final Exam
 - A double-sided, letter-sized, ***hand-written*** page will be allowed as reference for each exam

Assignments

- Total of **five assignments** to be completed individually:
 1. Line and polygon geometry
 2. Image effects
 3. Curves and splines
 4. Ray tracing
 5. Real-time rendering

Assignments & Late Days

- Each assignment has written and programming parts
 - Written component is due ahead of program
- You'll be allowed **five** grace "late days" to use as needed
 - Late day is 24 hour period
 - Cannot be used for written component
 - *Don't ask me for extensions!*

Bonus Opportunities

- Most (maybe all) assignments will have bonus opportunity
- Binary designation (you get it or you don't)
- No point credit value!
- Possibly your ticket to an A+ in this course:
 - A grade and a bunch of bonuses = A+
 - A- grade and all the bonuses = A+



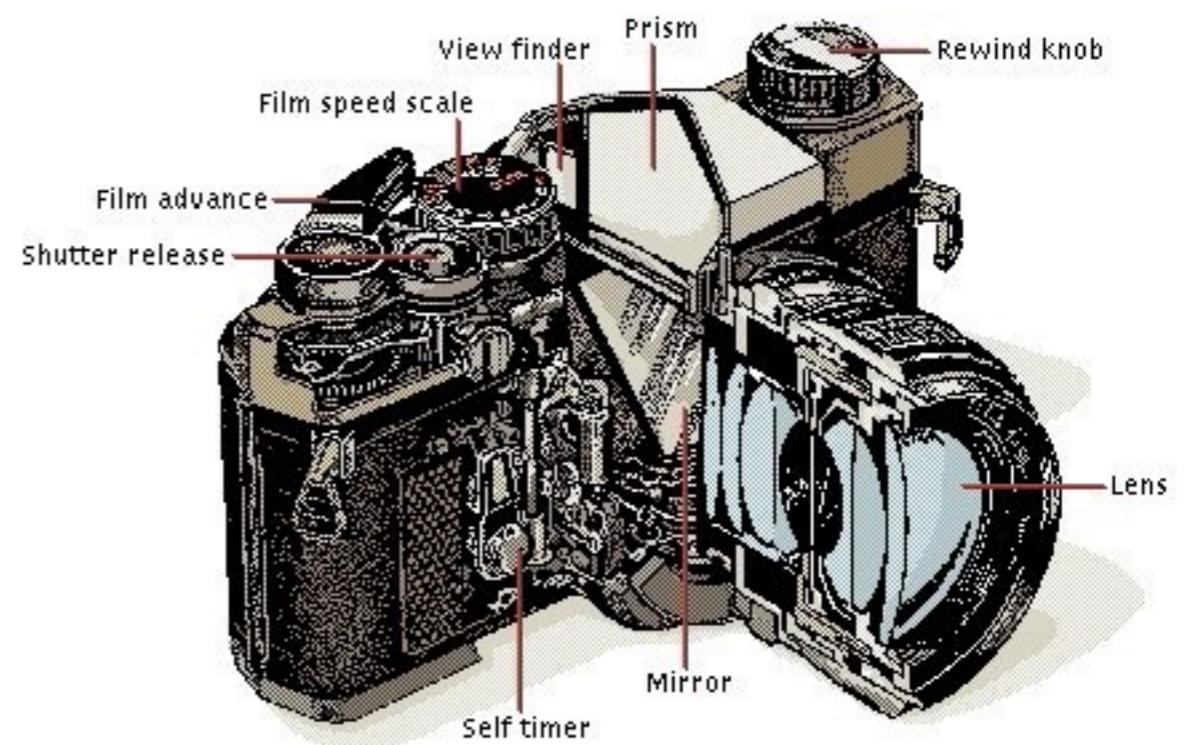
Questions so far?

Curiosities

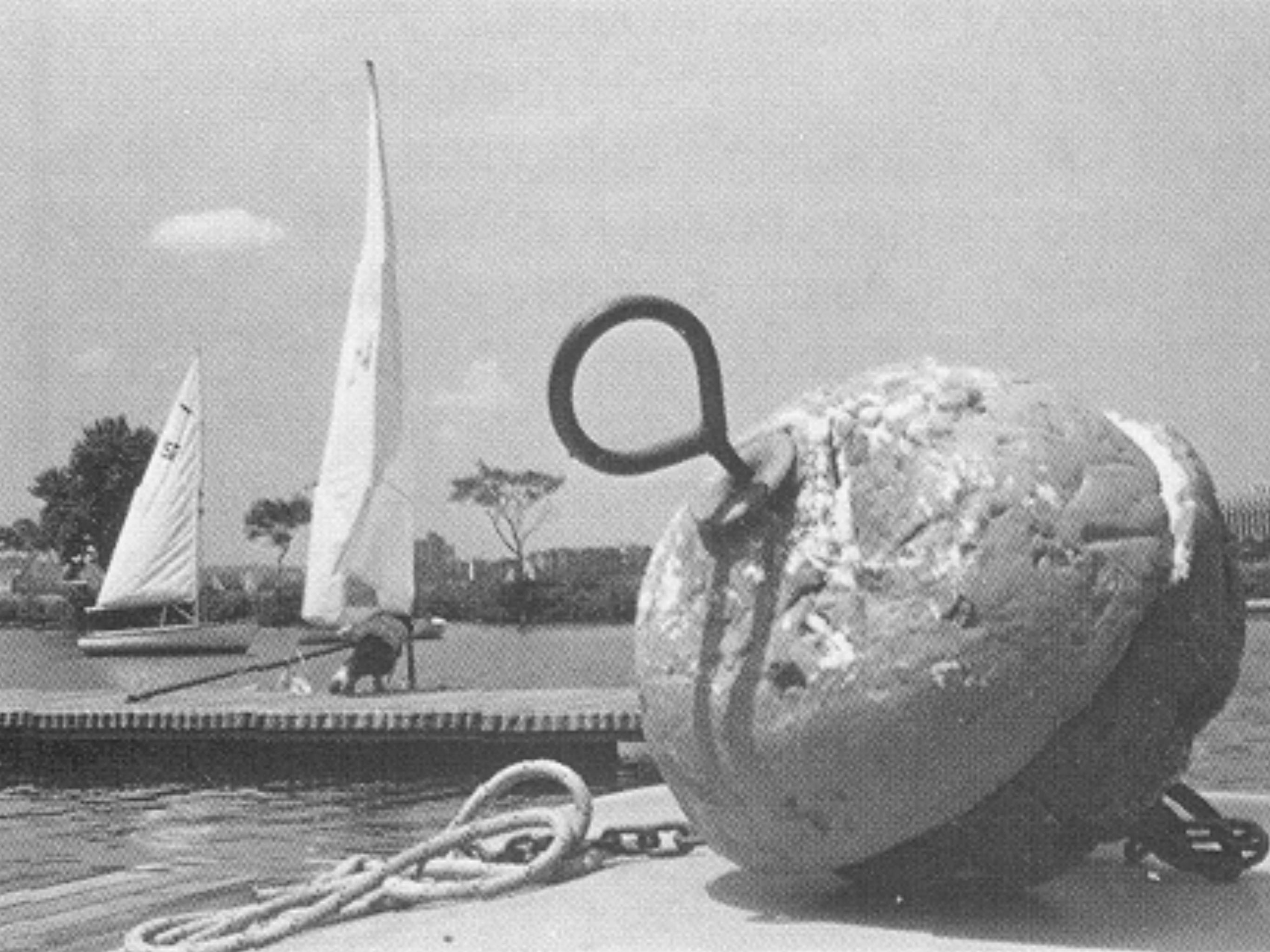
A taste of what's to come?

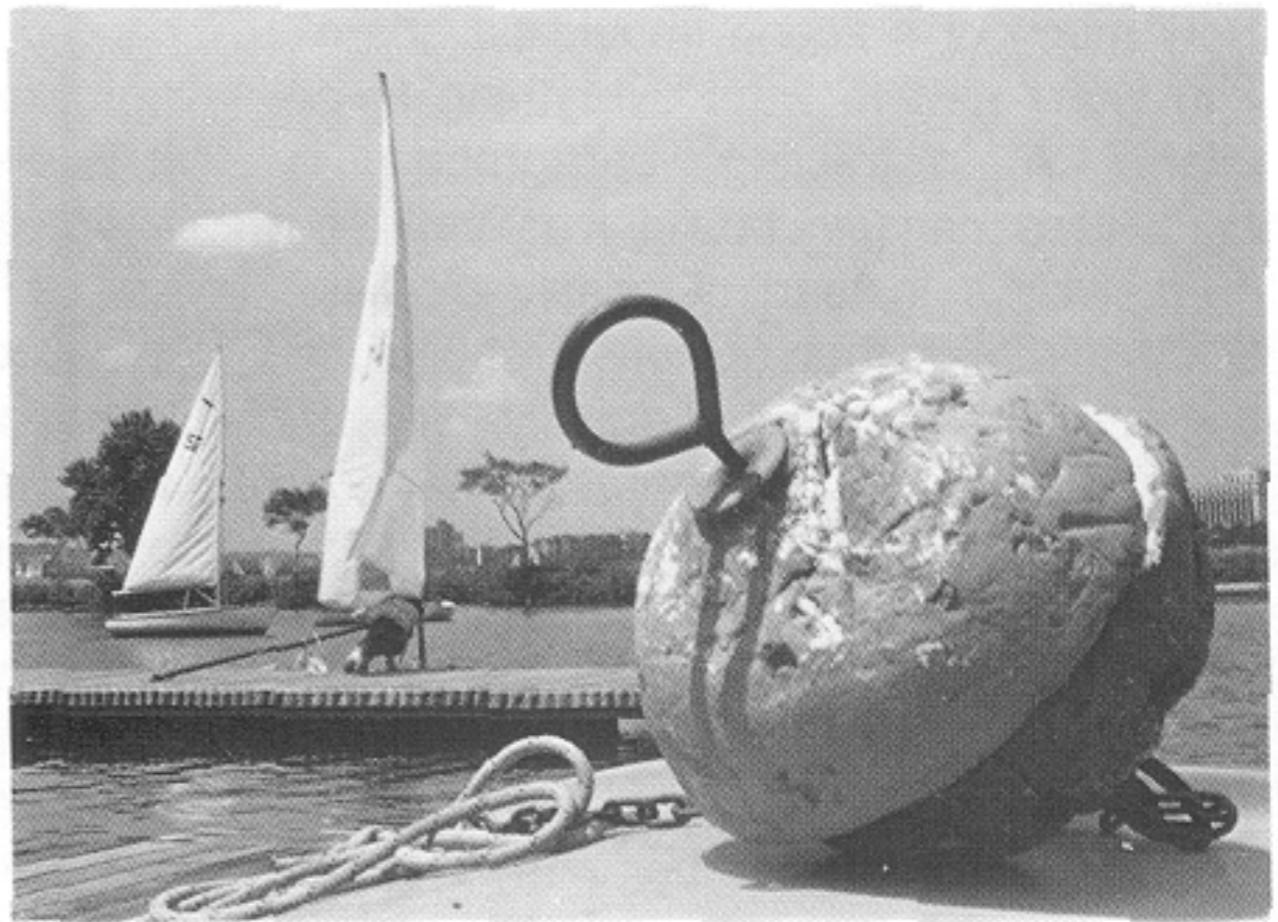
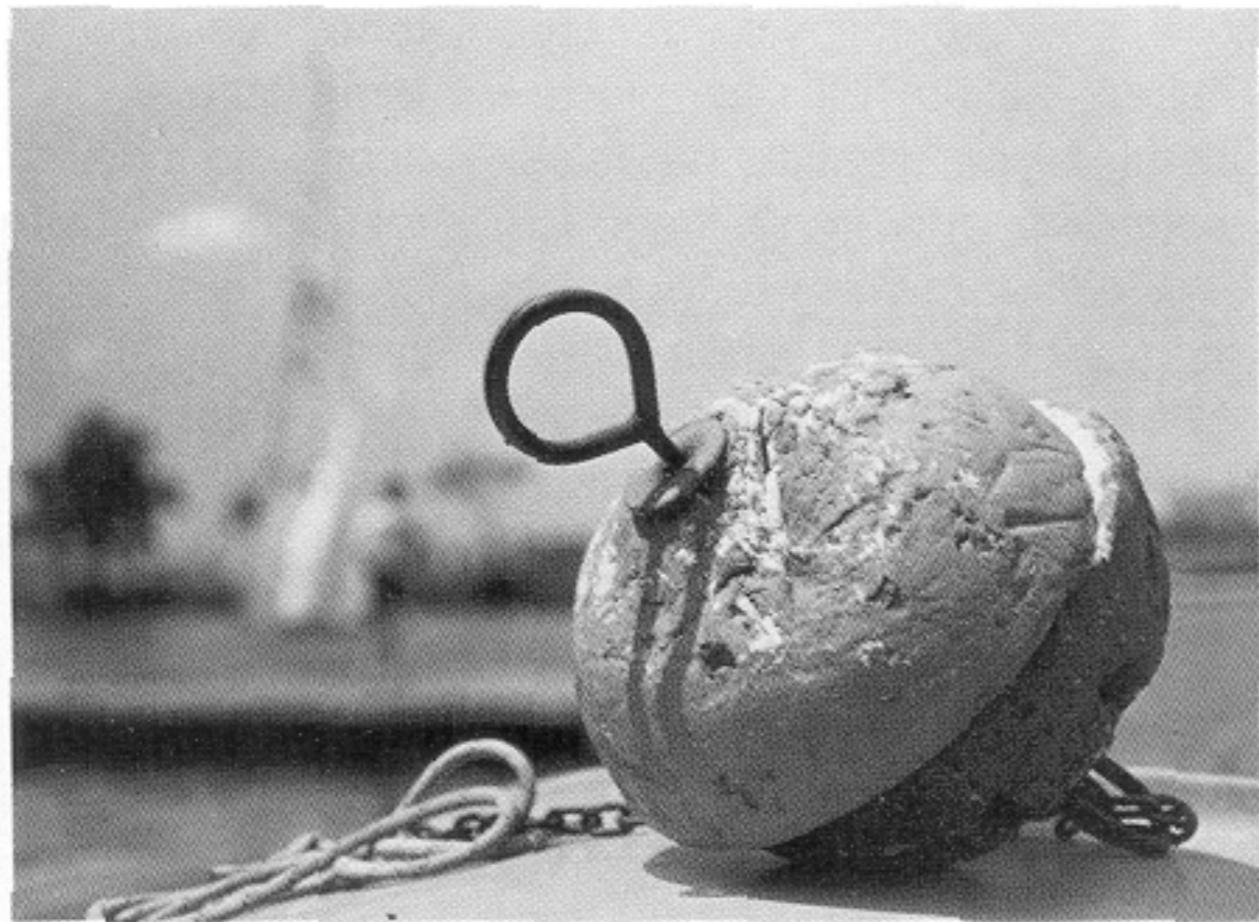


Cameras & Photography









Which one looks better?

A question of aesthetics...

Detailed explanations for all this and more,
coming up in CPSC 453!