Raytracing

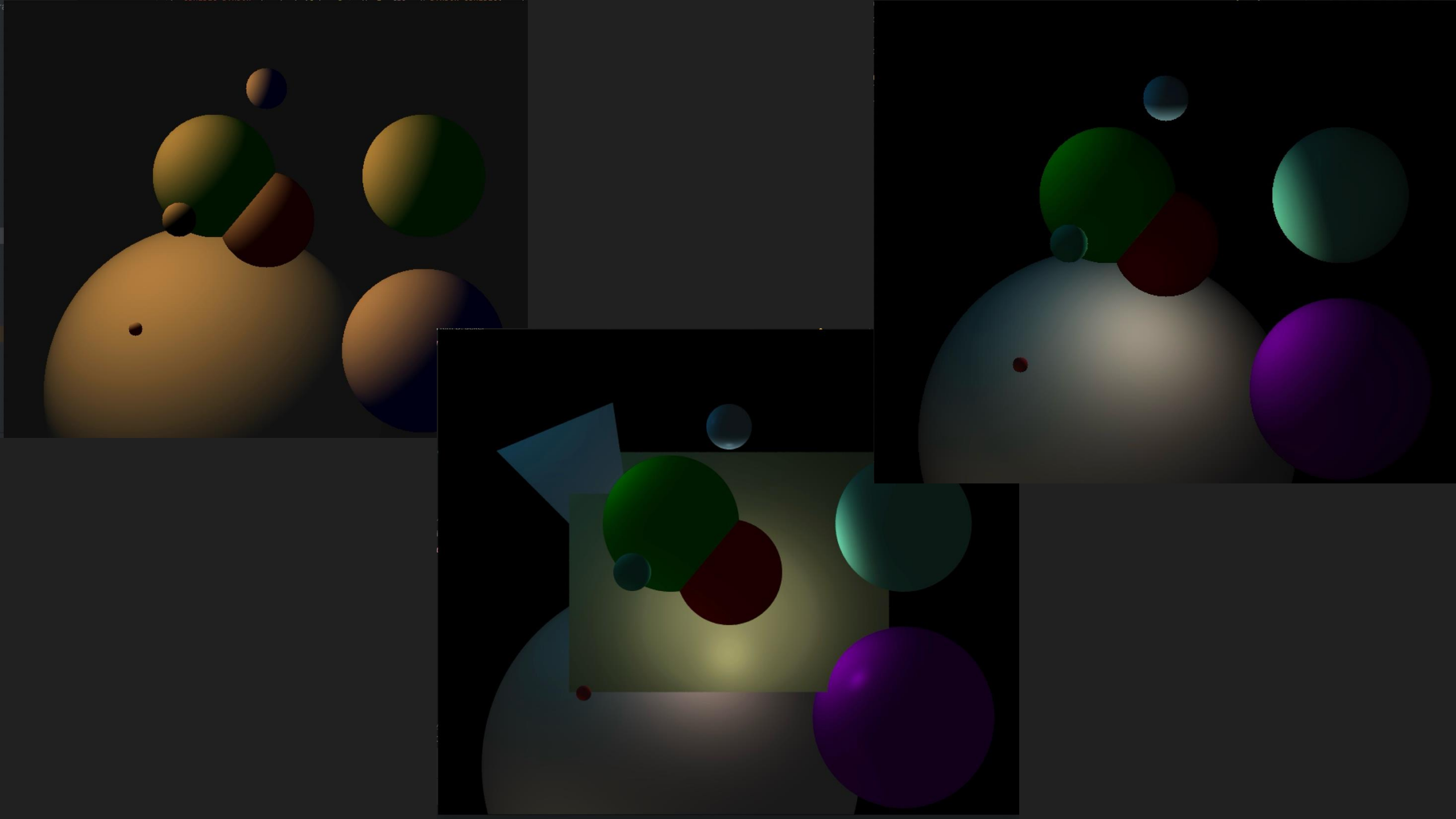
FS25 | HSLU
Kim D. Jeker
Rust

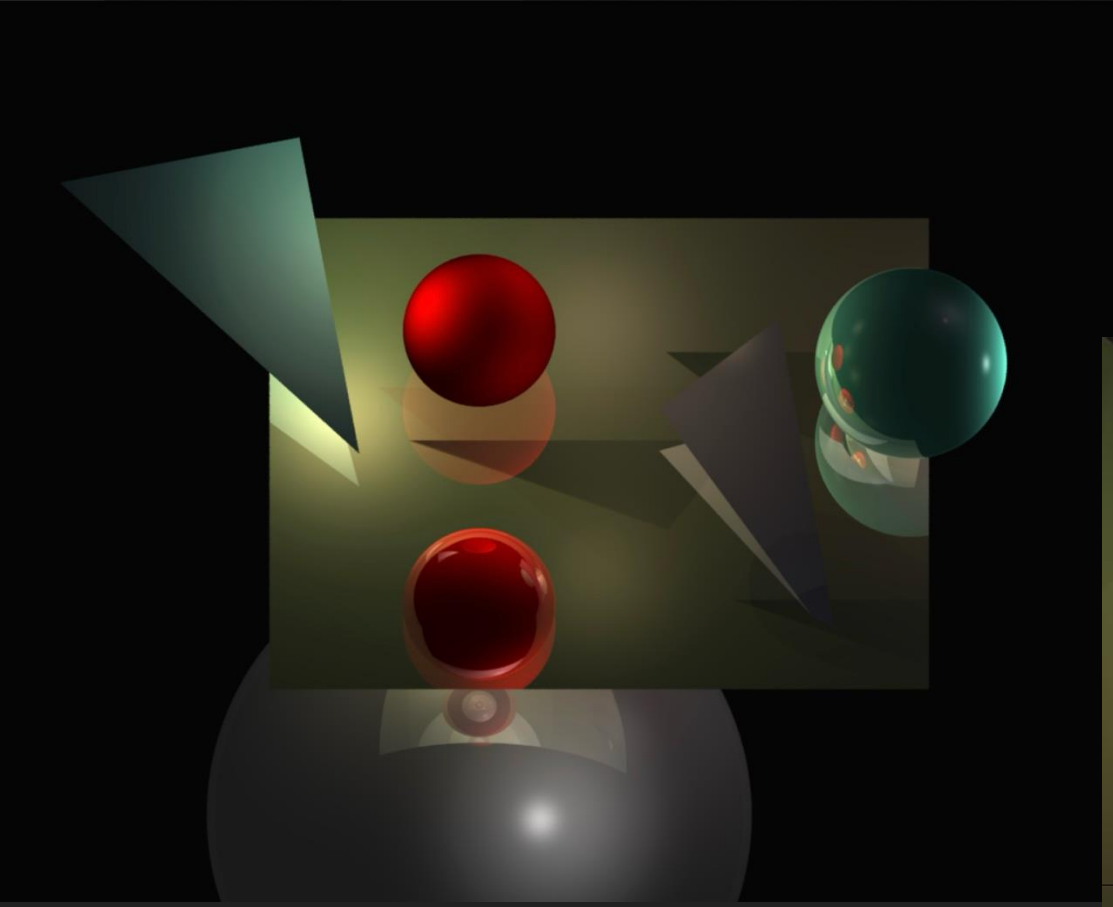
Features

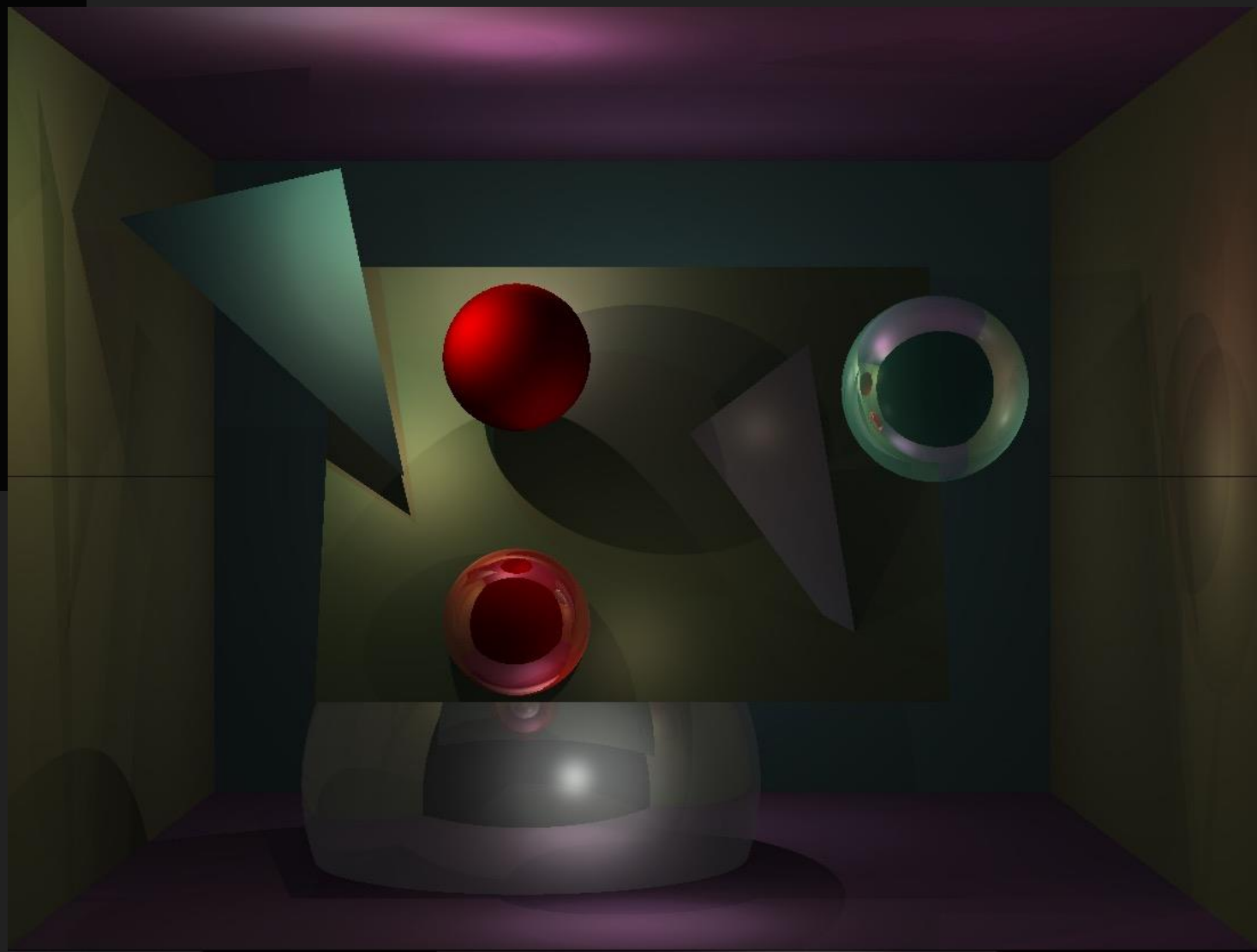
- Rastering inkl. Anti-Aliasing
- Schnittpunkte mit Kugeln & Dreiecke
- Ambient, Diffuse & Specular + Glanzpunkt
- distanzabhängiges Licht
- Perspektive
- Schattenwurf (Halb- & Kernschatten, inkl. weiche Schatten & Schatten von transmittierenden Objekten)
- Mesh-Import von Blender via .obj
- Reflektion
- Refraktion & Transmission, inkl. Fresnel

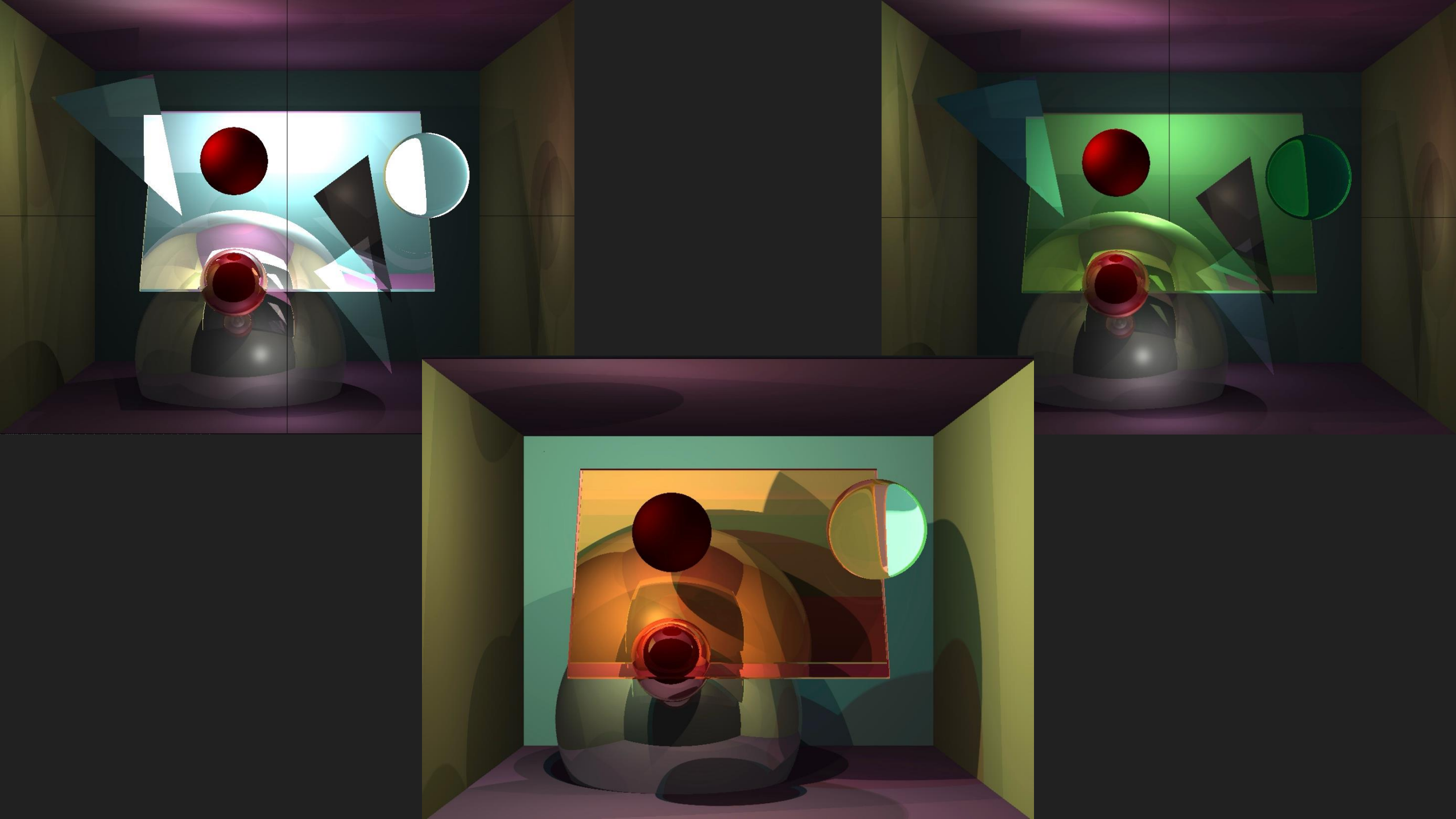
Ein paar Bilder

Snapshots während der Entwicklung



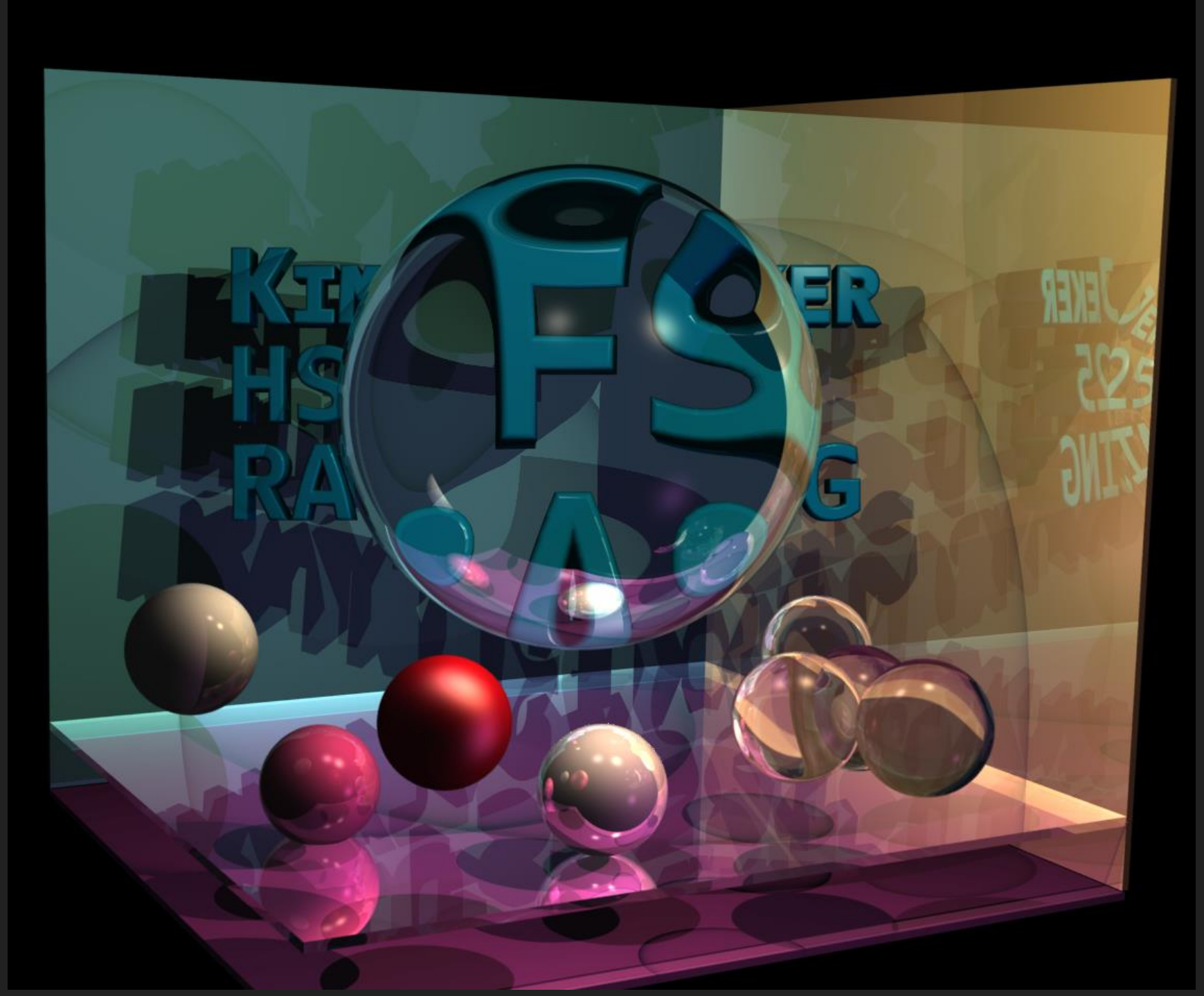







KIM D JEKER
HSLU FS25
RAY RACING

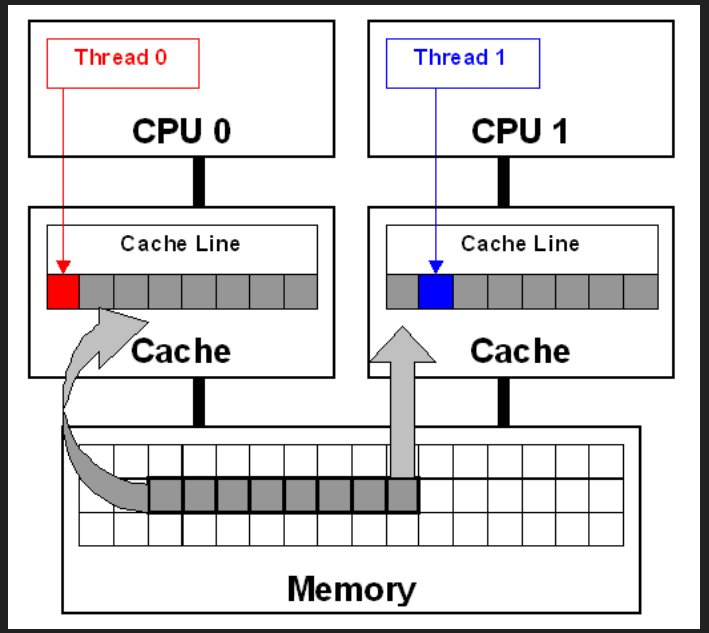
Finales Semesterbild



Performance – Paralelisierung in Batches

- Cache-Line optimierung
- Verhindert “False Sharing”

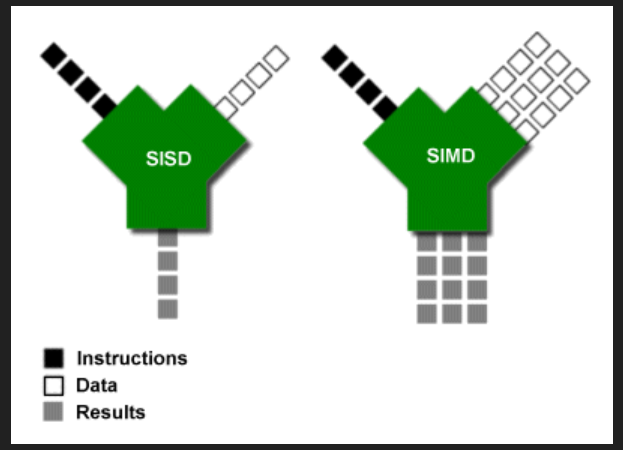
https://nccastaff.bournemouth.ac.uk/jmacey/Lectures/SIMD/images/cache.png

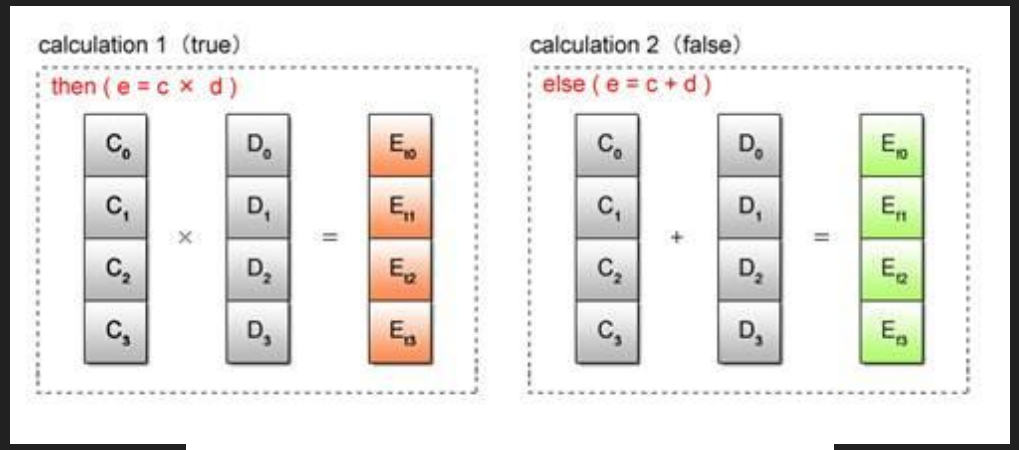


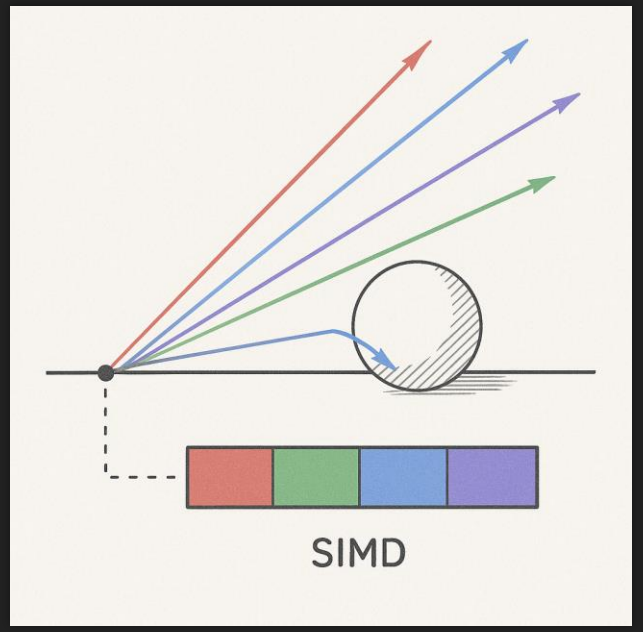
https://gateoverflow.in/120645/false-sharing-in-cache-line

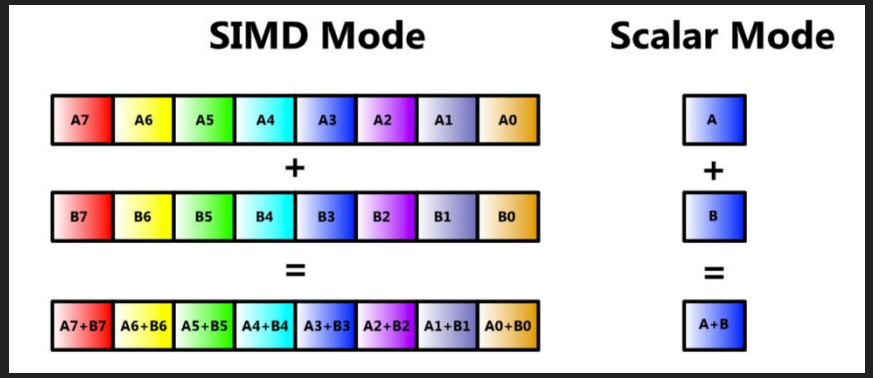
Performance – SIMD

https://arstechnica.com/features/2000/03/simd/

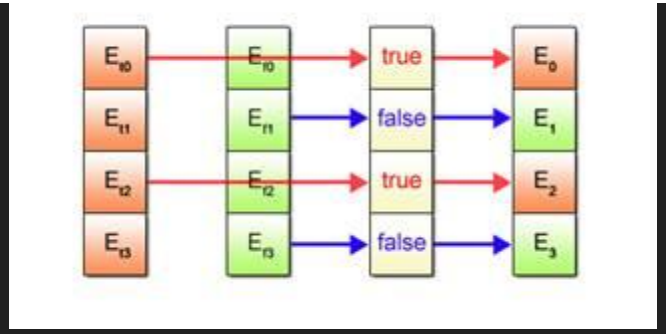








https://nccastaff.bournemouth.ac.uk/jmacey/Lectures/SIMD/#/



https://ftp.cvut.cz/kernel/people/geoff/cell/ps3-linux-docs/CellProgrammingTutorial/BasicsOfSIMDProgramming.html