IOS

Faculty for Informatics
Prof. Dr. G. Umlauf

HTWG Hochschule Konstanz
University of Applied Sciences

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Assignment 1

„3d Computer Vision“

Deadline 18.04.2022.

Preliminary remark

1. Get your favorite IDE with Qt and OpenGL running on your computer.
2. Get the template framework running on your computer.
3. Do **not** use functions from OpenGL, OpenCV, or any other library to compute affine and projective maps!
4. Use the template 3d-rendering framework provided and edit, extend and modify appropriately.

Part 1 (3d Scene)

Use OpenGL commands to render **your own scene (consisting of wireframe models of some objects)**. This is the **green** part in the Figure below.

The appropriate line in the code is marked with a comment.

Part 2 (Perspective Camera Model)

Implement your own **perspective camera model** consisting of all relevant camera parameters and render the relevant quantities, e.g. center of projection, camera pose, image plane, image principle point, etc. This is the **red** component in the Figure below.

Remark: The **rendering camera** class provided in the template framework is used for rendering purpose only. It is **NOT** the perspective camera of this part of the assignment. This is the **blue** component in the Figure below.

Part 3 (Perspective Projection)

Project the scene from Part 1 onto the image plane of the perspective camera model of Part 2 using the perspective camera model of Part 2. This is the **green** component in the **image plane of the perspective camera** in the Figure below.

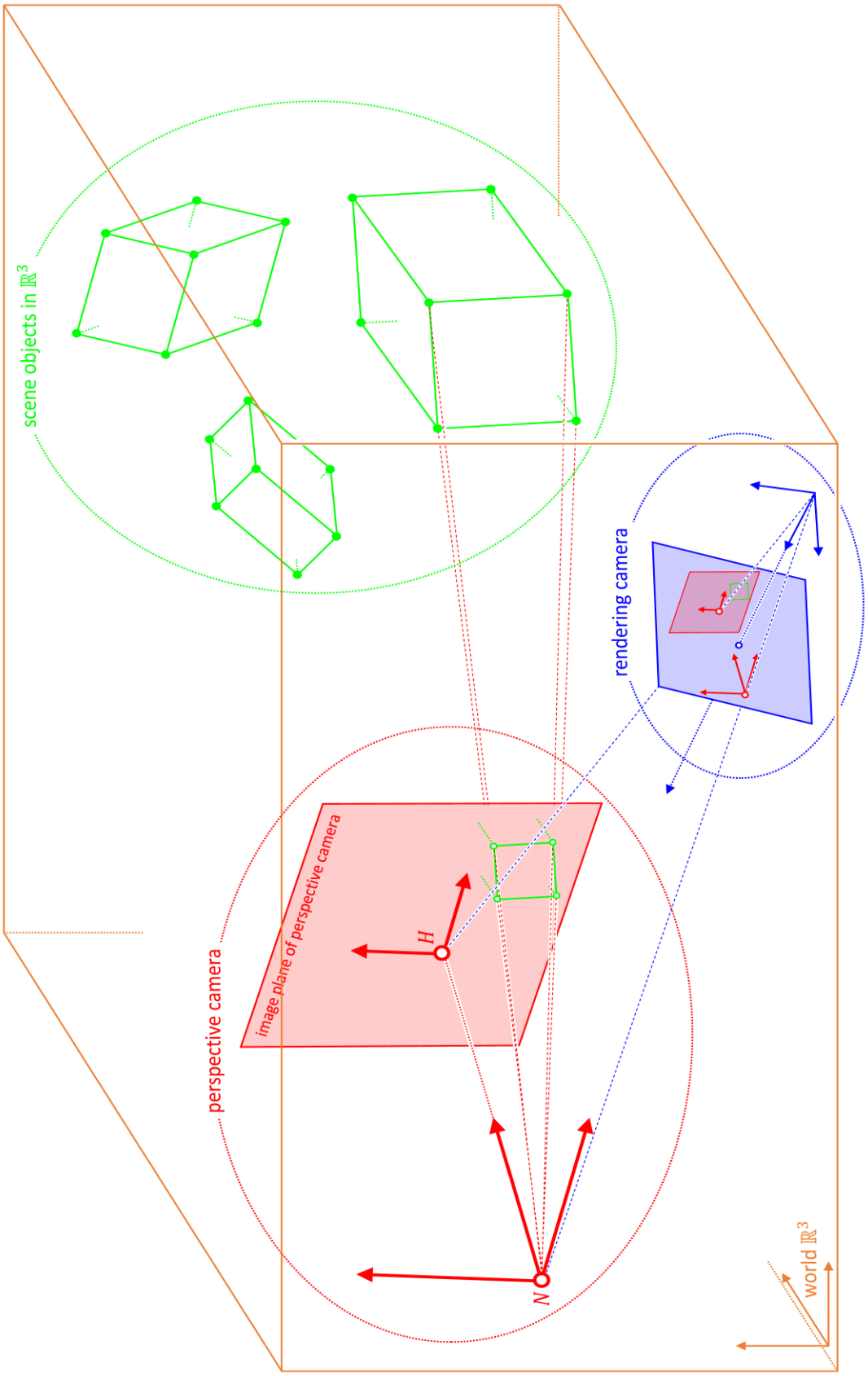

Figure 1: Schematic view of the relation between the **3d scene** (part 1 of this assignment), the **perspective camera** (part 2 of this assignment) and the **rendering camera** (part of the template framework).