

Daily Assignment 22

- To compare 4 orientation interpolation methods, implement following functions:
- *exp & log functions*
- **exp(rv)**
 - Converts a rotation vector to a rotation matrix
 - You can use Rodrigues' rotation formula or the method in Lecture 20
 - Returns a rotation matrix
- **log(R)**
 - Converts a rotation matrix to a rotation vector
 - You can use the method in today's lecture
 - Returns a rotation vector (the length of the vector is rotation angle)

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- *Interpolation functions:*
- **slerp(R1, R2, t)** - slerp
 - R1 & R2: rotation matrices for start & end orientations
- **interpolateRotVec(rv1, rv2, t)** - interpolate each element of two vectors
 - rv1 & rv2: rotation vectors for start & end orientations
- **interpolateZYXEulerAngles(euler1, euler2, t)** - interpolate each element of two euler angle tuples
 - euler1 & euler2: tuples of ZYX Euler angles for start & end orientations (euler1[0]: xang, euler1[1]: yang, euler1[2]: zang)
- **interpolateRotMat(R1, R2, t)** - interpolate each element of two matrices
 - R1 & R2: rotation matrices for start & end orientations
- *For all interpolation functions:*
 - All interpolation functions return a rotation matrix
 - The parameter t ranges from 0.0 to 1.0

Daily Assignment 22

- Start from Lecture 17 code,
 - Add functions in *22-addcode.py*
 - Replace *render()*, *key_callback()* by those in *22-replacecode.py*
- You will need to use
 - The given **lerp()** for **interpolateRotVec()**, **interpolateZYXEuler()**, **interpolateRotMat()**
 - The given **ZYXEulerToRotMat()** for **interpolateZYXEuler()**
 - Your **exp()**, **log()** implementation for **slerp()**, **interpolateRotVec()**
- Program usage (already implemented):
 - When the program is run, only **slerp()** result is visible
 - A key: Toggle **slerp()** result
 - S key: Toggle **interpolateRotVec()** result
 - D key: Toggle **interpolateZYXEuler()** result
 - F key: Toggle **interpolateRotMat()** result
 - Z key: Hide all results
 - X key: Show all results

How to Submit

- What you have to submit:
 - Only **one** .py file: *main.py*
- Write down all your code to *main.py*
- `> py -3 main.py` or `$ python3 main.py` should show your glfw window.

How to Submit

- Submit your assignment **only through the Assignment (과제) menu of the lecture home** at portal.hanyang.ac.kr.
- **Recommended due date: Today's lecture end time**
- (Hard due date: 23:59 Today)