

Software Lab:

Modeling: ★★☆☆☆
Creativity: ★★★★★
Programming: ★★☆☆☆

Jupyter Notebooks in Teaching

Interactive exercises for HOFEM lecture

Setting

In most courses about topics that involve programming it is tough to provide high quality exercises. Usually the theoretical background is provided in a script or lecture notes that is independent of the simulation code the student has to use or to write. The idea of jupyter notebooks is to combine lecture notes and code in one web-based ipython notebooks. Goal of this software lab is to create an interactive exercise for the High Order Finite Elements an Isogeometric Analysis lecture.

Example:

Calculate first 10 Fibonacci numbers in Python

```
In [2]: def fib(n):  
        if n == 0:  
            return 0  
        elif n == 1:  
            return 1  
        else:  
            return fib(n - 1) + fib(n - 2)  
  
print "First 10 Fibonacci numbers:", [fib(i) for i in range(10)]
```

First 10 Fibonacci numbers: [0, 1, 1, 2, 3, 5, 8, 13, 21, 34]

Task

To complete the tasks, students are required to learn about

- Python and Jupyter Notebooks
- Python Plotting libraries like Matplotlib or Plotly
- High order finite elements and isogeometric analysis
- any other topic that might be useful for designing interactive programming exercises

Supervisors

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