KIT GRACE Science School

Matlab and its Applications in Geoinformatics & Computational Intelligence

Date: April 29, April 30 and May 2, 2019

Time: 9.30 am -1.00 pm

Location: Building **20.40**, GIK PC-Pool (Room 039)

Lecturer: Prof. Dr. Mulhim Al-Doori (University of Fujairah)

Credits: 1

```
# -*- coding: utf-8 -*-

import datetime as dt
import numpy as np
from pymongo import MongoClient
import pytz
import json
import urllib2
import re

def mm_intensity_radius(mag, depth, s=
    sqrts2depth2 = np.sqrt(s**2 + dept
    if method == 'ambraseys_85':
        mmi = 1.5*mag - 0.5 + 0.15*np.
    elif method == 'shebalin_98':
        mmi = 2*mag - 0.2 - 3*np.log10
    elif method == 'ambraseys_2000':
        mmi = ((mag - 1.176)/0.817)/0.
    else:
        print 'Undefined method! Using
        mmi = 2*mag - 0.2 - 3*np.log10

    try:
        index = np.argmax(np.argwhere(
        return s[index]
    except:
        return 0

dbname = 'USGS_Events'
collname = 'EQEvents'
client = MongoClient('172.22.147.50',
stable = set(['Montenegro','Poland','
db = client[dbname]
coll = db[collname]
docs = coll.find({"$and":[{"mag":{"$gt
#dists = np.zeros((130,31))
places = []
countries = []
for i,doc in enumerate(docs):
    shebalin_98_radius = mm_intensity_
    ambraseys_85_radius = mm_intensity
    ambraseys_2000_radius = mm_intensi

#     coll.find_one_and_update({"_id":
#     coll.find_one_and_update({"_id":
#     coll.find_one_and_update({"_id":
    if doc['depth'] > 80 and not doc['
```

Contents

MATLAB provides an interactive environment for numerical computation, visualization, and programming. This fourth generation programming language comprises of built-in math functions and tool boxes which enable the user to explore multiple approaches and reach a solution with relative ease in comparison to other programming languages. It enables the user to analyze data, develop algorithms and create models and applications. MATLAB can be used for a range of applications, including signal processing and communications, image and video processing, control systems, test and measurement, computational finance and geodesy. More than a million engineers and scientists in industry and academia use MATLAB, the language of technical computing.

Course topics

Session 1 - Introduction

- Analysis and Visualisation with Vectors and Matrices
- Debugging, Functions and Problem Solving
- Logical Operators, Conditional Statements and Loops
- Strings and Files

Session 2 – Matlab in Geoinformatics

- Digital Image Processing and Graphics Tools
- Geoinformatics Tools
- Geographic Data Import & Export
- 2D & 3D Map Displays
- Mapping Toolbox

Session 3 - Machine Learning in Matlab

- Classification and regression
- Artificial Neural Networks Tool
- Fuzzy Logic tools
- Genetic Algorithms Tools

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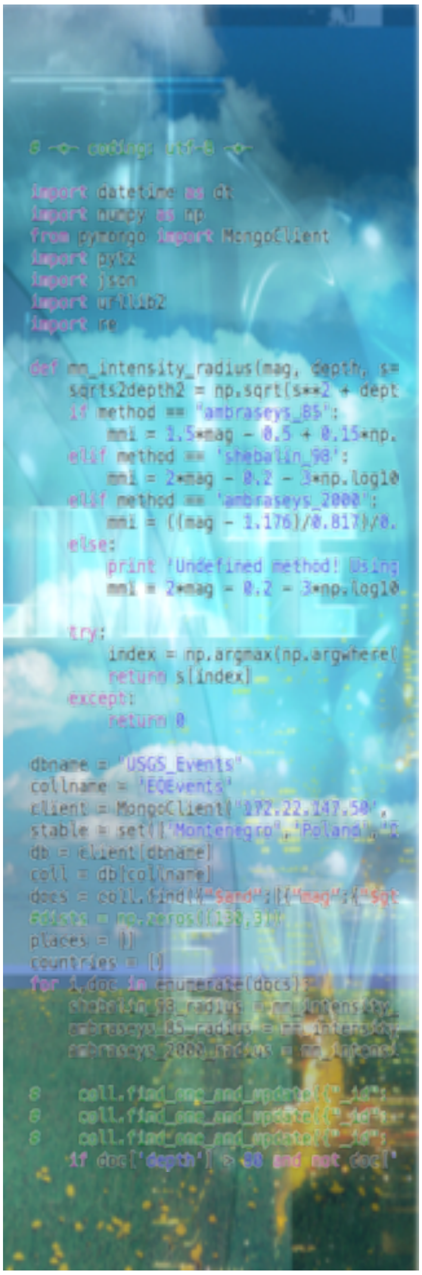
RESEARCH FOR GRAND CHALLENGES

About the Lecturer

Prof. Al Doori's personal and collaborative research mainly centers round developing and applying novel cognitive, computational intelligence and machine learning techniques to a range of complex real-world and multi-model application areas. More generally, he is interested in novel interdisciplinary research for mathematical modeling, analysis and control of complex systems — both in theory and applications.

Registration

Please register via online form.



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