Customizing GIS for the Web

GIS-624 Syllabus

Instructor: Dr. Pinde Fu (pindefu.ru@gmail.com, 909-7932853, ext 1794)

Why this course?

Web GIS, as the combination of the web and GIS (Geographic Information Systems), is a new and promising field. It has unlocked the power of GIS, and put online maps and geospatial intelligence in the offices/homes of millions and the hands of billions.

Web GIS has immense applicability to e-government, e-business, e-science, and daily life. Government employees can utilize Web GIS to improve public services and enhance collaboration across agencies. Businesses can use Web GIS to enhance their existing business models and create new ones. Researchers can find new solutions to meet the challenges of the new frontiers. Web GIS has great practical value to our world today and into the future.

When & Where?

Tuesdays, 6 – 8 pm

Course Objectives

- Provide students with a comprehensive and up-to-date overview of Web GIS, including the basic concepts, principles, related fields (e.g. mobile GIS) and frontiers
- Inspire students with the broad and real-world applications of Web GIS, especially in e-Government, e-Business
- Provide students with the state-of-art technical skills to build Web GIS applications and the knowledge needed to choose from various Web GIS development options

Textbooks

- **Pinde Fu, 2016, Getting to Know Web GIS (2nd edition).** ESRI Press. Redlands, CA. ISBN-13: 978-1589484634, ISBN-10: 1589484630

. (https://www.amazon.com/Getting-Know-Web-GIS-Second/dp/1589484630)

- Additional materials will be provided in video and other digital format.

Schedule

(Subject to change)

Date	Lectures	Labs	Assignment
1/16	Course overview; Web GIS basics and applications	Create a map tour application using ArcGIS Online	
1/16	Web layers, maps and apps	Open data, smart mapping, and Arcade	
1/16	Web services; Feature services and volunteered geographic information	Publish and use hosted feature services to collect VGI	
1/16	Smart Mapping and Story Maps	Create a story map using multiple templates	#1
1/23	Web AppBuilder for ArcGIS	Create web apps with Web AppBuilder	#2
1/30	Mobile GIS	Use Collector and Survey 123 for data collection; Create native apps using ArcGIS AppStudio	#3
2/6	Real-time Web GIS; Sensor Network and Internet of Things	Create a real-time web GIS app using Operations Dashboard	#4
2/13	Online spatial analysis and business intelligence	Create a web app for site selection	#5

2/20	Intro to HTML5 (HTML, JavaScript, and CSS)	Build a web page to introduce yourself or something you like	$6
2/27	Intro to ArcGIS API for JavaScript (1)	Adapt ArcGIS JavaScript 2D and 3D app samples; Debug JavaScript	
3/6	ArcGIS API for JavaScript (2)	Tasks, events handling, and widgets	#7
3/13	Web AppBuilder custom widgets	Use and develop custom widgets	
3/20	Build on-premises Web GIS with ArcGIS Enterprise; Map services (dynamic/image tile/vector tile); Web services standards and interoperability	Publish and use dynamic map services with time animation using ArcGIS Pro	#8
3/27	Geoprocessing services; Insights for ArcGIS; Big data & GeoAnalytics	Publish and use geoprocessing services	#9
4/3	Image services and drone technologies	Create 2D and 3D web apps from drone images	#10
4/10	3D Web GIS; Indoor 3D; Virtual Reality; Augmented reality	Create a 3D web app using ArcGIS Pro and ArcGIS scene clients	#11
4/17	Final Exam (open book)		

Technologies you will learn in the class

- ArcGIS Online

- ArcGIS Enterprise 10.6 (ArcGIS for Server & Portal for ArcGIS)
- ArcMap
- Web AppBuilder for ArcGIS
- ArcGIS API for JavaScript
- Mobile apps including Collector and Survey123
- AppStudio for ArcGIS
- Operations Dashboard for ArcGIS
- ArcGIS Pro
- Drone2Map for ArcGIS

Evaluation Method

- Homework (60%) + Exam (40%)
- Late homework policy: Late homework will not be accepted.
- The total score of your homework will be scaled to 60 points.