Implementing Python to Streamline Stream Water Quality Analysis

Primary Presenter
Guillaume Turcotte
Villanova University

Presentation format: Luncheon Presentation

Abstract text: The network capabilities available with ArcGIS Desktop Network Analyst extension can be useful in analyzing the accumulation of upstream source pollution. A faculty member and undergraduate student in the department of Geography & the Environment at Villanova University were interested in determining the number of natural gas wells that were part of each individual stream that encompass the drainage area in the Pennsylvania portion of the Chesapeake Bay Drainage Area. As there are a large number of streams to be analyzed, the Find Upstream Accumulation feature on the Network Analyst toolbar proved to be of little value since it can only evaluate one feature at a time.

Consequently, I contributed to their project by implementing Python in order to assign the number of wells upstream for each of the stream line features. I wish to share the processes I implemented in order to make the analysis streamlined and effective with Python scripting.

A research project at Villanova University aimed to determine the number of natural gas wells upstream of all streams that encompass the Pennsylvania portion of the Chesapeake Bay Drainage Basin. As there are a large number of streams to be analyzed, the Find Upstream Accumulation feature on the Network Analyst toolbar proved too time consuming. Consequently, I contributed by implementing Python in order to assign the number of wells upstream for each of the stream line features. I wish to share the processes I implemented in order to make the analysis streamlined and effective with Python scripting.
Vanguard Cabinet - Everything You Need to Know

Primary Presenter
Wendy Peloquin, GISP
RS&H
Jacksonville, FL

Second Presenter
Vanguard Cabinet

Presentation format: Luncheon Presentation

Abstract text: The Vanguard Cabinet (VC) is a URISA initiative to engage young GIS practitioners, increase their numbers in the organization, and better understand the concerns facing these future leaders of the GIS community. The VC is an advisory board made up of URISA young professionals who represent the young membership of the organization. The Cabinet’s mission is to collaborate with URISA’s Board of Directors and Committees in creating and promoting programs and policies of benefit to young professionals. Comprised entirely of passionate young members selected from different geospatial disciplines, the Cabinet aims to position URISA as the center of opportunities for creative young professionals who are committed to improving URISA and the geospatial profession via innovation, collaboration, networking, and professional development.

Please join us if you are interested in learning more about how you can participate in the VC, or its mentoring and outreach activities.
Precision Panos for ArcGIS

Primary Presenter
Paul Burrows
Cyclomedia
Walnut Creek, CA

Presentation format: Luncheon Presentation


Learning Objective 2: Asset Management - New base map content source and software tool that aids in asset inventory verifications.

Description: This highly interactive session will focus on live demos of panoramic imagery working seamless inside of Esri’s ArcGIS. By overlaying your GIS layers directly inside new street imagery, one can immediately see change and adjust GIS features accordingly.

Case Studies: Village of Wellington, FL, Washington DC Dept. Transportation
Research: Panos in ArcGIS Demo

What information and skills will people take home? Learn the advantages of using a new and growing class of geo imagery for asset management and GIS database updating.

Outline of session: I. Street Imagery Described, II. Video or Live Demo Shown, III. Interactive Q&A
The State of Play in American Communities

Primary Presenter
Elizabeth Dow
KaBOOM!
Washington, DC

Presentation format: Luncheon Presentation

Abstract text: KaBOOM! is a national nonprofit that envisions a great place to play within walking distance of every child in America and that strives to give children the childhood they deserve. Play is an urgent cause that is a critical component of childhood well-being and achievement, community health, and economic vitality.

KaBOOM! uses spatial analysis and statistics to better understand where playspaces in communities exist, who has access to them, and where there are high concentrations of low-income children with limited access to play.

The public can access mapofplay.org run by KaBOOM! to add, rate, and photograph playspaces in their community. Once we quality control data, we perform spatial analyses at the city level using GIS software. We determine a quarter mile walking distance area to each playspace using a service area analysis, which accounts for highways, street patterns, and other barriers to walking.

We also perform a raster analysis to combine the factors of child and low-income density demographics. Areas falling outside a quarter mile of a playspace can then be evaluated and prioritized based on how many low-income children live there. Finally, we perform a weighted overlap analysis with access areas and demographic data to determine how many children do not have access to play.

GIS analysis allows KaBOOM! to understand the exact number of children, low-income households, and households that are served by playspaces. Our findings serve as an aid for KaBOOM!, cities, and advocates to use in support of play infrastructure.
Usage and integration of CCTV and GIS data for Maintenance programs

Primary Presenter
Justyna Grinholc, M.A.
GIS Specialist
Water Resources Department
Fulton County, Georgia

Second Presenter
Colin Gowens, M.A., GISP
GIS Manager
Water Resources Department
Fulton County, Georgia

Presentation format: Luncheon Presentation

Abstract text: The Water Resources Department at Fulton County uses CCTV technology to inspect the waste water collection system. The application of CCTV technology improves Water Resources responses to customer calls regarding service disruptions, assist in the management of technical contracts, support asset management practices, and drive dollars to system rehabilitation projects. This presentation will focus on the process for working with large CCTV datasets, applications for interacting with the data, and analysis of the data to target specific locations for system rehabilitation projects. Therefore, it will show usage and integration of CCTV and GIS data for Maintenance programs that are developed to protect the public's investment in the infrastructure and to ensure the collection system operates at maximum efficiency.
FEMA Floodplains on the Web

Primary Presenter
Mr. David Torraca, GISP
Loudoun County
Leesburg, VA

Second Presenter
Ms. Susan Carlson
Loudoun County
Leesburg, VA

Presentation format: Luncheon Presentation

Abstract text: The Federal Emergency Management Agency (FEMA) partnered with Loudoun County and Michael Baker International to update the County’s Flood Insurance Rate Maps, or FIRMs. The last countywide update of flood hazard areas occurred 15 years ago. This update provides high quality flood risk data in order to increase awareness of flood hazard areas and to promote community mitigation action, resulting in reduced risk to lives and property.

In support of the project’s community outreach, a web application was created to show flood risk determination based on parcel and address location. The web application was built in-house using Esri’s JavaScript API and ArcGIS Server web services hosted by Loudoun County. This presentation will discuss the process of creating the web application in support of the broader outreach effort.
GIS roles in Hamilton Police 9-1-1

Jin Xie
CAD/GIS Analyst
Hamilton Police Service, Ontario, Canada

Abstract text: We all know that GIS technology grows so quickly and it is widely used in 9-1-1 by many solution providers. To ensure taking the full advantage of the advanced GIS capabilities in emergency service, data currency and accuracy are the critical! I would like to talk about mapping data acquisition and data process for the Computer Aided Dispatch system in Hamilton Police Service.

We are so fortunate that Hamilton's GIS team maintains great quality GIS data and shared data with Police Service. This data then is processed in GeoMedia Pro and IMap/Editor to generate map files for the dispatch system. Here are the enhancements of the data upgrade in Hamilton Police service:

Increased the frequency for the update: for year, mapping data was only updated every two years due to lack of resources. We update data two times last year, which is a big improvement; this is because currency and accuracy of location means difference to live and loss in emergency service. Our goal is to update the data more frequently.

Implemented routing capabilities within the map data: This improvement helps officers routing on the street, so that no additional commercial devices like GPS are needed anymore. This improvement is significant as we have many one-way streets in Hamilton down town area!

More information added - here are examples:

- a new layer called Childcare Facilities is added into the map, so that dispatchers can easily locate the facilities in case of emergency for evacuation;
- a new layer called One-way Street Arrows is added on top of the street network, which provides great visual aid to the officers and dispatchers.
- Legibility improved: scale dependency is applied for some layers such as street numbers, street names and park names
- cartographic improvement: symbology and colors setting is improved so that the map looks like more professional