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## Work Experience

**September 2006 – Present, GIS Programmer, North Carolina Department of Agriculture and Consumer Services (NCDA&CS)**

- **Responsibilities**

- Lead developer for web based mapping and other GIS services with ArcGIS Server and other technologies
  - Design databases and web applications
  - Lead junior developers
- Develop Python Scripts
  - Automate workflows
  - For online ArcGIS web services
  - Develop new tools
- Develop with Model Builder
  - Automate workflows
  - Illustrate work flow
  - Develop Python Scripts
- Administer Google Earth Enterprise. NCDA&CS has an enterprise license with Google Earth. We build our own globe to draw spatial information in 3D (Google Earth) and 2D (Google Maps) from our own servers.
  - Administer Red Hat Linux Servers
  - Install and maintain Google Fusion and Earth Server
  - Using Fusion software consume and cache large statewide data sets including: terrain, imagery, various large vector datasets (parcels, flood zones, soils)
  - Build web-based mapping applications using Enterprise Google Maps
- Design and implement web-based database applications for data collection with C# and
- Administer Windows and Red Hat Linux servers including:
  - Write specifications and get quotes from vendors for hardware and software
  - Windows
    - MS SQL Server
      - Animal Health Programs database for the State Veterinarian
      - Liquid Propane Inspection System
      - Food Firms for NCDA&CS Food and Drug division
    - Active Directory
    - ArcGIS Server
  - Red Hat Linux
    - ArcGIS license server
    - Jira - Project Management
    - Subversion - Source Control
    - Google Earth and Fusion servers
- GIS duties in Planning Section within Incident Command Structure (ICS)

- Train users to use ArcGIS and Google Earth and provide support and consultation
- Research emerging technology
- Prepare maps with ArcGIS
- **Major Accomplishments**
  - Community Wildfire Protection Planning
    - Migrate 96 MS Access databases into 1 MS SQL Server database
    - Led effort in designing and programming a web application to manage database
  - Porcine Reproductive & Respiratory Syndrome (PRRS) mapping
    - Built system to receive DNA sequences from South Dakota State University lab, validate sequences and farms, and upload the sequences into MS SQL Server as part of the Animal Health Program database. The upload utilizes FTP and Python
    - Developed web form to allow AHP users, both state and corporate partners, to query and download sequences. Implemented permission schemes to allow private partners access to only their own data and a more limited set of other data
    - Online mapping of farms within PRRS study area
  - Animal Health Disease Mapping
    - Implemented web based tools to allow entry of diseases in the AHP Database
    - Developed web mapping of swine diseases with Enterprise Google Maps and AHP data and JavaScript
      - Time Progression
      - Buffering
      - Download of data as CSV
  - Served as team lead in converting Liquid Propane (LP) inspection system from a paper MS Access hybrid to a web based system
    - Field staff now enter inspections from the field
    - Manage companies inspected
    - Generates warning, penalty, and other compliance letters
  - Provided mapping in response efforts to the 2011 North Carolina Tornado
  - Implemented WMS services for multiple state wide imagery datasets
  - Developed ArcPad forms
    - Field data collection in the 2007 Castleberry Botulism food recall
    - In conjunction with North Carolina Department of Public Health, pre-hurricane public health assessment
    - Women and Children's Health post 2011 Tornado
  - Developed on line mapping application for NC Detect incorporating emergency room, ambulance, and Poison Control Center data. Developed with Java and SVG
  - Assisted in migration of Food Firms Database from Access to MS SQL and DotNet Web application
- **Recognitions and Awards**
  - NCDA&CS Team Accomplishment Award for LP Gas project
  - USFDA Commissioners Special Citation
  - NCDA&CS Employee of the Month

### **March 2004 – August 2006, Teaching Assistant and Research Assistant, NCSU**

- Responsibilities

- Scan, ortho-rectify, and create mosaics and metadata of CIR aerial photography for National Park Service using Adobe Photoshop, Leica Photogrammetry Suite (Erdas Imagine), and ER Mapper.
- Perform horizontal accuracy assessment of Mosaics of Aerial Photography by collecting points in the field with Trimble GPS and calculating RMSE for determination of NMAS standard.
- Teaching Assistant for NR 531 and PRT 462 course: Assist students with operation of ArcMap, grade student assignments. Prepare and present presentations to classes
- Write Macro for use in Excel with Visual Basic for automation of emails to distribute license codes to students.
- Intern with NC Public Health Preparedness and Response (Project 516)
  - Create forms for ArcPad with ArcPad studio and VB script for field data collection of health information.
  - Create maps with ArcMap for field investigators.
  - Create online map with ArcIMS.
  - Facilitate upload of field data to MS SQL Server.
  - Train field workers on use of form and data collection in ArcPad with GPS.
- Intern with NCSU Veterinary School and NCDA&CS
  - Create tools for ArcPad with JScript. Tools facilitate collection of spatial information on barn or other building interiors
  - Install IIS, Apache, Tomcat, ArcIMS, and ArcGIS server software
  - Wrote code with ArcObjects in Java to accept and post GIS data to MS SQL Server via ArcSDE to facilitate real time collection of GIS data
- Recognitions
  - 2006 College of Natural Resources Outstanding Graduate Student

### **May 2003 – February 2004: Intern, NC Department of Energy and Natural Resources**

- Wrote macro for ArcMap in Visual Basic using ArcObjects for pre-process of EPA
- Source Water Allocation Plan (SWAP) application.
- Differentially correct GPS positions of Public Wells received from field employees with
- Simple repairs of Trimble GPS units.

### **October 2000 – August 2002: Telecom/Network Technician at Nortel Networks**

- Install, troubleshoot, move, and repair digital and analog telephone lines and network
- Assign IP and DNS addresses through NetID.
- Configure and install network equipment.
- Install software. Windows 2000, Lotus Notes, Outlook, Access, TN Host, Reflection etc.
- Install and terminate CAT 5 and T1 cable.

## **Education**

- Degrees
  - 2006 – NCSU - Master of Natural Resources at.
  - 1997 – NCSU - BA in Multi-disciplinary Studies.
  - 1987- Northern High School, Durham, NC.
- Other Training and Certifications

- Red Hat Certified Technician
- GISP 71780
- Incident Command Structure - ICS 100, ICS 200, and ICS 300
- GIS Specialist for Incident Management (S341), National Wildland Fire Training

## **Programing Languages**

C#, Java, Visual Basic, Jscript, VB Script, HTML, CSS, JavaScript, Bash, Python, T-SQL

## **Professional Organization**

- Carolina URISA ( <http://carolinaurisa.org/> )
  - 2015-2016 Advisory Board
  - Co-administered Poster Session at NC GIS Conference 2015
  - Co-Adminster Website

## **Publications**

- Thomas P. Colson, James D. Gregory, Stacy A. C. Nelson, and Edward G. Shipman. A Mobile Geographic Information System to Support Stream Identification. Geographic Information Systems and Water Resources IVAWRA Spring Specialty Conference. Houston, TX. May 8-10, 2006
- Thomas P. Colson, James D. Gregory, Stacy A. C. Nelson, and Edward G. Shipman. Stream Type Determination in North Carolina with Mobile GIS. Journal of the American Water Resource Association.

## **Community Service**

**2006 – Present Boy Scout Troop Leader. Serving as Scoutmaster since 2012.**