A SAAS ARCHITECTURE FOR 3D GENEALOGY TREES

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Overview

This session will introduce a new method for storing, viewing in 3D and securing genealogical information. It assesses the different characteristics of this approach, including user interactions as well as its compatibility with common Internet access devices. First, we will focus on the proposed genealogy data representation in itself and the available techniques to store and share it in a secure way. A specific, Cloud oriented SAAS architecture able to support 3D genealogy features and offer them to the large public will then be studied, in order to illustrate the general approach. Then we will see how such information can be visualized and interacted with, in 3D, making use of Internet connected devices such as desktop, laptops, but also mobile devices (Tablets, smartphones), using standard tools such as WebGL and Javascript. Finally, we will review other possibilities for visualizing and interacting with such 3D genealogy representations, such as generating physical models through 3D printing.

Objectives

After attending this session, the participants will be able to answer the following questions:

1. What are the possibilities to visualize genealogy trees in 3D? What are the available techniques? What are their advantages and disadvantages?
2. In what form can this genealogy data be archived? What are the available indexing techniques? What are their advantages and disadvantages?
3. How can we best secure the genealogical information in regards to their storage, sharing, and their security?
4. How to interact with genealogical data 3D representation? How to interact with multiple genealogy trees or sub special trees? What are the strengths of this 3D representation approach?
5. What are the available means to access this 3D genealogical information? What is the level of compatibility of this type of solution regarding conventional Internet connected devices such as desktops or laptops, and regarding mobile devices (tablets, smartphones)?

Instructions

Most of the materials and contents will be addressed directly during the session. However, it could be useful to consult the references attached at the end of this document prior to the Session, since third party references will not all be addressed in detail but also used for illustration purposes. Please do not be deterred if the information provided in these reference is too abstract or technical in nature: the session will present every single of these approaches in very simple terms and will illustrate them visually.

Following the session, participants should be knowledgeable on the various approaches to create and manipulate 3D genealogy trees, and the algorithmic principles underlying them. Through the examples presented, as well as the third party links in the present document and the proposed SAAS architecture, they will be able to select the most relevant solution to integrate and deploy for their specific needs.

Session structure

The session is a 30 minutes panel. It is structured in two parts, as follows:

1. Introduction
2. Algorithmic principles and general approach
    a. Graph theory and general tree structures principles
    b. Genealogy specific tree data structures and algorithms
    c. Navigation and indexing
    d. A universal identifier for each individual
3. Architecture Implementation
    a. Visualization
    b. Data storage
    c. Data securing
4. Demonstration
5. Perspectives

References

1. Introductive references & principles
    - https://en.wikipedia.org/wiki/Genealogical_numbering_systems
    - http://www.saintclair.org/numbers/
    - http://condor.depaul.edu/ntomuro/courses/00winter/notes/lecture10.html
    - http://storageconference.us/2012/Presentations/M15.Wright.pdf
2. Genealogy-centric tree data structures, H-Trees / Fractal Trees
    - http://www.tamurajones.net/FractalGenealogy.xhtml
    - http://www.sci.utah.edu/~csilva/papers/thesis/claurissa-tuttle-ms-thesis.pdf
    - http://vgc.poly.edu/~csilva/papers/tvcg2010a.pdf
    - https://progenygenealogy.com/products/family-tree-charts/fractal-tree-chart.aspx
    - http://patentimages.storage.googleapis.com/pdfs/US8229967.pdf
3. Information on the proposed approach for general indexing
    - https://hal.archives-ouvertes.fr/hal-00717421
    - http://www.google.com/patents/US20150318865?cl=en