Stephen White 123 E Riverside St.
Phone: (517)-817-6824 Williamston, MI 48823
Email: whites73@msu.com

Education:

Spring Arbor University, 2011 – 2015; Summa Cum Laude, BA in Computer Science, Mathematics, and Philosophy

Michigan State University, 2020 - Present; PhD Student in Computational Mathematics Science and Engineering

Professional Experience:

Microsoft (Office – TEO – Redmond, WA) November 2017 – September 2020

- Worked with the collaboration prototype that evolved into what is now publicly called Fluid Framework with the goal to stretch its different use cases
- Worked on a calendar prototype, developing the data model and the implementation of a novel method of keeping track of time

Microsoft (SESIT) – Redmond, WA July 2015 – October 2017

- Assisted coding an application to view all machines on a network
- Provided coding support for facial mapping using the Cognitive Analytics Suite
- Explored the possibilities of using a Borel Isomorphism to reduce the dimensions of data sets
- Assisted in the development of the Service Maturity Model (SMM) Tool Website and database

Microsoft (SESIT) -- Fargo, ND June 2014 – August 2014

- Full time Software Testing Engineering Intern: Developed extensively in C#
- Enhanced and debugged an Excel add-in targeted to assist power users in Microsoft's financial department

Local Logic Media -- Jackson, MI September 2013 – June 2014; September 2014 – February 2015

- Part time web developer and database admin, also assisted with Android development
- Developed the PHP back end processes and databases of Restaurant Logic and Agency Logic
- Developed a tablet menu Android application for Ike's Restaurant

Software Services -- Spring Arbor University May 2012 – September 2013

- Full time developer and database admin over two summers, retained part time over school year
- Assisted modifying the student portal and automating pen/paper reports and business processes, validating Government PELL grants, and assisted in implementing a blackboard data warehouse

Office of Academic Technology (OAT) -- Spring Arbor University September 2011 – January 2012

- Part time editor, HTML to assist with front end development of Blackboard pages for SAU

Awards and Honors:

Member of Spring Arbor University Honors Program

Senior Thesis: An Analysis of the Hidden Structure Behind the Chaos of the Williamowski-Rössler Network

Abstract: The Williamowski-Rossler Network is a set of differential equations that display chaotic behavior. In the resulting bifurcation diagrams I studied the behavior of certain peak and troughs as one coefficient was modified, noting that charting these peaks resulted in sections of continuity, and that discontinuities were removed if minimum values were enforced for both peaks and troughs.

Three years a member of Spring Arbor University Programming Team

Placed third twice and first once in the Consortium for Computing Sciences in Colleges Regional Competition

Publications:

Paper Submitted (Third author): A Particle-in-cell Method for Plasmas with a Generalized Momentum Formulation

Abstract: In this paper we formulate a new particle-in-cell method for the Vlasov-Maxwell system. Using the Lorenz gauge condition, Maxwell's equations for the electromagnetic fields are written as a collection of scalar and vector wave equations. The use of potentials for the fields motivates the adoption of a formulation for particles that is based on a generalized Hamiltonian. A notable advantage offered by this generalized formulation is the elimination of time derivatives of the potential that are required in the standard Newton-Lorenz treatment of particles. This allows the fields to retain the full time accuracy guaranteed by the field solver. The resulting updates for particles require only knowledge of the fields and their spatial derivatives. A method for constructing analytical spatial derivatives is presented that exploits the underlying integral solution used in the field solver for the wave equations. The field solvers considered in this work belong to a larger class of methods which are unconditionally stable, can address geometry, and leverage an O(N) fast summation method for efficiency, known as the Method of Lines Transpose (MOLT). A time-consistency property of the proposed field solver for the vector potential form of Maxwell's equations is established, which ensures that the semi-discrete form of the proposed method satisfies the semi-discrete Lorenz gauge condition. We demonstrate the method on several well-established benchmark problems involving plasmas. The efficacy of the proposed formulation is demonstrated through a comparison with standard methods presented in the literature, including the popular FDTD method.

Patent Awarded: Modelling Actor and Asset Relationships (Patent No 10388040)

Abstract: Displaying a representation of an asset. The method includes an act of displaying a different representation for at least a first actor of the one or more actors. An asset being an item capable of being owned, and actors being entities capable of owning an asset. The method also includes displaying the representation of the asset and displaying the different representation for the first actor such that a likelihood of the first actor owning the asset can be evaluated based on the representation and the different representation.

Patent Awarded: Method of Discovering and Modeling Actor and Asset Relationships Across a Cloud Ecosystem (Patent No 10511606)

Abstract: It can be difficult to manage assets, particularly when determining ownership of assets. Systems and methods for facilitating identification of ownership of an asset include identifying an asset (e.g., an item capable of being owned), identifying one or more actors (e.g., an entity capable of owning an asset), and identifying interactions between the asset and each actor. The systems and methods additionally apply a decay factor to the identified interactions to cause a reduction in the significance of the identified interactions between the asset and each actor and produce an asset ownership score for each actor based on the decay-modified interactions. The resulting asset ownership score for each actor is provided to an entity in a fashion that allows the entity to identify a comparative likelihood that each actor is a potential owner of the asset.

Patent Awarded: Time Systems as Data (Patent No 11151104)

Abstract: Time is typically measured as a set of tick marks, and these tick marks are typically run through a series of equations that reduce them down to year, month, day, etc. We instead constructed a tree structure based on recurring patterns in the Gregorian calendar et al that is searched based on a tick mark. While sacrificing a trivial amount of speed, we get increased control over how we label time, giving us much needed flexibility for things such as a user crossing time zones, switching over to daylight savings time, adding leap seconds, or wishing to construct their own customized calendar (as a school may want to index by semester or a business by fiscal year).

Patent Awarded: Digital Map Calendar User Interface (Patent No 11061525)

Abstract: The above paradigm for modeling time gave us the ability to view a calendar akin to a digital map, being able to zoom in and out to different levels of granularity, also having a calendar react when things such as leap seconds were added or daylight savings time implemented.

Patent Filing: Translation of Time Between Calendar Systems (Publication No 20210272069)

Abstract: Furthering the above method, this includes accessing a first tree structure for a first calendar system, where data corresponding to the first tree structure include time intervals for the first calendar system that are arranged into layers of nodes, and where the layers of nodes are mapped to universal time. The method also includes scheduling a calendar content item corresponding to a time fragment relative to the universal time. The method further includes translating the calendar content item to a first human-readable time fragment for the first calendar system by traversing the first tree structure corresponding to the first calendar system to convert the time fragment to the first human-readable time fragment based on the mapping of the layers of nodes of the first tree structure to the universal time.