**CSFV**

**University of Washington**

**Monthly Technical Report for October, 2012**

Reporting period: 1 October 2012 – 31 October 2012

Date of Report: 15 November 2012

Project Title: Verigames

Contract Number: FA8750-12-C-0174

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# Verigames - Project Progress

**1. Expected Progress This Month**

Finish up the changes to the divide by zero type system and convert this type system (or another, if we deem this one to be not useful) into a game.

Continue working through bugs and other issues as Verigames ingests larger software programs.

Extend the Annotation File Utilities to allow insertion of casts in arbitrary locations so that Verigames can insert casts where buzzsaws were used.

Integrate the new dataflow framework into Verigames.

Continue hiring process.

**2. Accomplishments This Month**

With the larger goal in mind of getting Verigames to ingest larger software programs, we fixed the GET layout, fixed an issue that would generate cyclic game boards, and began work on a “TestSolver” that will ensure correct constraints are generated for each program.

We added the ability to insert casts on return statements in the Annotation File Utilities, and a plan is in place to support arbitrary expressions (implementation of this is in progress).

The divide by zero type system is close to done. The case study and turning that type system into a game are the remaining items.

The dataflow framework for flow sensitivity is nearly complete. A few last edge cases remain to be resolved. Once that is done, we will begin the integration into Verigames.

On the game side, we began to clean up the model view controller and separate the visualization from the game logic. This will allow us to more easily swap out different visualization styles in the future. We are considering exploring a few different visual metaphors in addition to traffic and pipes/balls.

We demonstrated the game to TopCoder and provided some feedback on CSFV site wireframe proposals. We think any of the three final wireframe proposals are workable for our game with the understanding that some customization will be done for each game, in our case to potentially support multiple leaderboards, groups, or other yet-to-be determined features.

We continued to evaluate resumes to find appropriate candidates for interview.

**3. Deliverables Submitted**

N/A

**4. Publications Made**

# “Evaluating Competitive Game Balance with Restricted Play” by Alexander Jaffe, Alex Miller, Erik Andersen, Yun-En Liu, Anna Karlin, and Zoran Popović. In *Artificial Intelligence and Interactive Digital Entertainment (AIIDE 2012)*, (Palo Alto, CA), October 8-12, 2012.

# “RRT-Based Game Level Analysis, Visualization, and Visual Refinement” by Aaron William Bauer and Zoran Popović. In *Artificial Intelligence and Interactive Digital Entertainment (AIIDE 2012*), (Palo Alto, CA), October 8-12, 2012.

"**ReIm & ReImInfer: Checking and inference of reference immutability and method purity**" by Wei Huang, Ana Milanova, Werner Dietl, and Michael D. Ernst. In *Object-Oriented Programming Systems, Languages, and Applications (OOPSLA 2012*), (Tucson, AZ, USA), October 23-25, 2012.

"**Reducing the barriers to writing verified specifications**" by Todd W. Schiller and Michael D. Ernst. In *Object-Oriented Programming Systems, Languages, and Applications* *(OOPSLA 2012)*, (Tucson, AZ, USA), October 23-25, 2012.

**5. Meetings**

* Weekly UW Verigames team meeting
* Weekly integrator conference call

**6. Issues or Concerns**

Hiring is still a slow process. We are setting up a new round of interviews.

Iterative game development cannot start until our IRB is approved. Our game design and development process is highly reliant on gathering data from real players and making adjustments to the game based on perceived patterns of play. Our inability to collect and study data in the short term means that there are a number of game design questions that will remain open for the time being.

**7. Plans for Next Month:**

Support the new class file format in Java 8.

Finish the TestSolver (described above).

Finish up divide by zero type system case study, and convert the type system into a game.

Finish extending the Annotation File Utilities to allow insertion of casts in arbitrary locations.

Begin integrating the new dataflow framework into Verigames.

Brainstorm additional visual metaphors for the game (besides pipes and traffic) that we can test for engagement.

Continue the hiring process.

**8. Financial Summary**

October: Projected expenditures for the month were estimated at $100k. Actual expenditures were $63k. We expect invoicing from Julia Srl to start before the end of the year. Hiring is still in progress for programmers and artists. Craig Connor started as a full time developer on October 3.