



Get Started

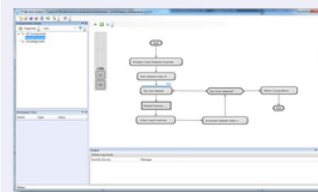
Standard Experiments

Component Developers

- Create New Experiment
- Open Existing Experiment

Recent Projects

- Standard VSM
- Roccio
- ObFiz Contest



About TraceLab

Create your first experiment

Tutorials



Contests Website
(for contest publishing)



Community and Learning Resources
(Wiki, Forum, Tutorials, bug Tracking System)

TraceLab: An Experimental Workbench for Equipping Researchers to Innovate, Synthesize, and Comparatively Evaluate Traceability Solutions

The work described in this talk is funded by the National Science Foundation under grant number CNS: 0950004

Ed Keenan, Adam Czauderna, Greg Leach, Jane Cleland-Huang, Yonghee Shin, Daria Manukian, Shervin Hossein, Derek Hearn. DePaul University

Evan Moritz, Malcom Gethers, Denys Poshyvanyk, College of William and Mary

Jonathan Maletic³, Kent State Univ., Jane Huffman Hayes, University of Kentucky, Alex Dekhtyar, CalTech Poly

TraceLab



- A research environment designed to allow researchers to visually compose and execute traceability experiments using a library of shared components.
- Components can be written in any memory managed language such as Java, C#, etc. TraceLab also allows calls to tools such as Matlab or R etc.
- TraceLab currently runs in a Windows environment but is designed to port to Linux.

Vision of TraceLab



- Reduce the time a new researcher needs to instrument their research environment.
- Foster the exchange of research ideas
 - ▣ Package up and share experiments.
 - ▣ Reuse components in order to synthesize and evaluate new ideas.
- Provide a benchmarking environment based around the concept of “contests.” Each contest is:
 - ▣ Driven by a research question from the Grand Challenges of Traceability.
 - ▣ Data sets
 - ▣ Task
 - ▣ Metrics

TraceLab Environment

The screenshot displays the TraceLab Environment interface. On the left is a 'Components Library' with a tree view containing categories like Algorithms, ControlLogic, IO, Exporters, Importers, Preprocessors, Results, Computation, Display, Uncategorized, and Utilities. Below it is a 'Workspace View' table listing variables and their types.

The main workspace shows a flowchart starting with a 'Start' node, branching into three parallel paths: 'Target Artifacts Importer and Preprocessor', 'Source Artifacts Importer and Preprocessor', and 'AnswerMatrixImporter'. The first two paths converge into a 'TFIDF Dictionary Index Builder' component, which then feeds into a 'Tracer Component'. The 'Tracer Component' feeds into 'Results Metric Computation', which then feeds into 'Results Charts', and finally 'End'.

A configuration window for the 'TFIDF Dictionary Index Builder' is open, showing the following input/output mapping:

Input	Mapped to	Type
listOfArtifacts	targetArtifacts	TraceLabSDK.Types.TLArtifactsC

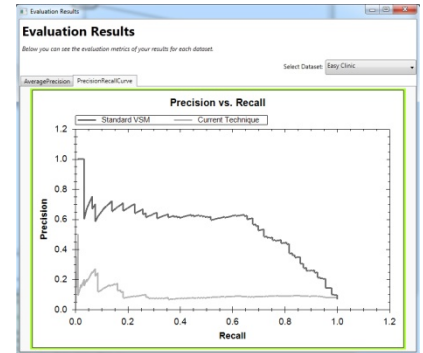
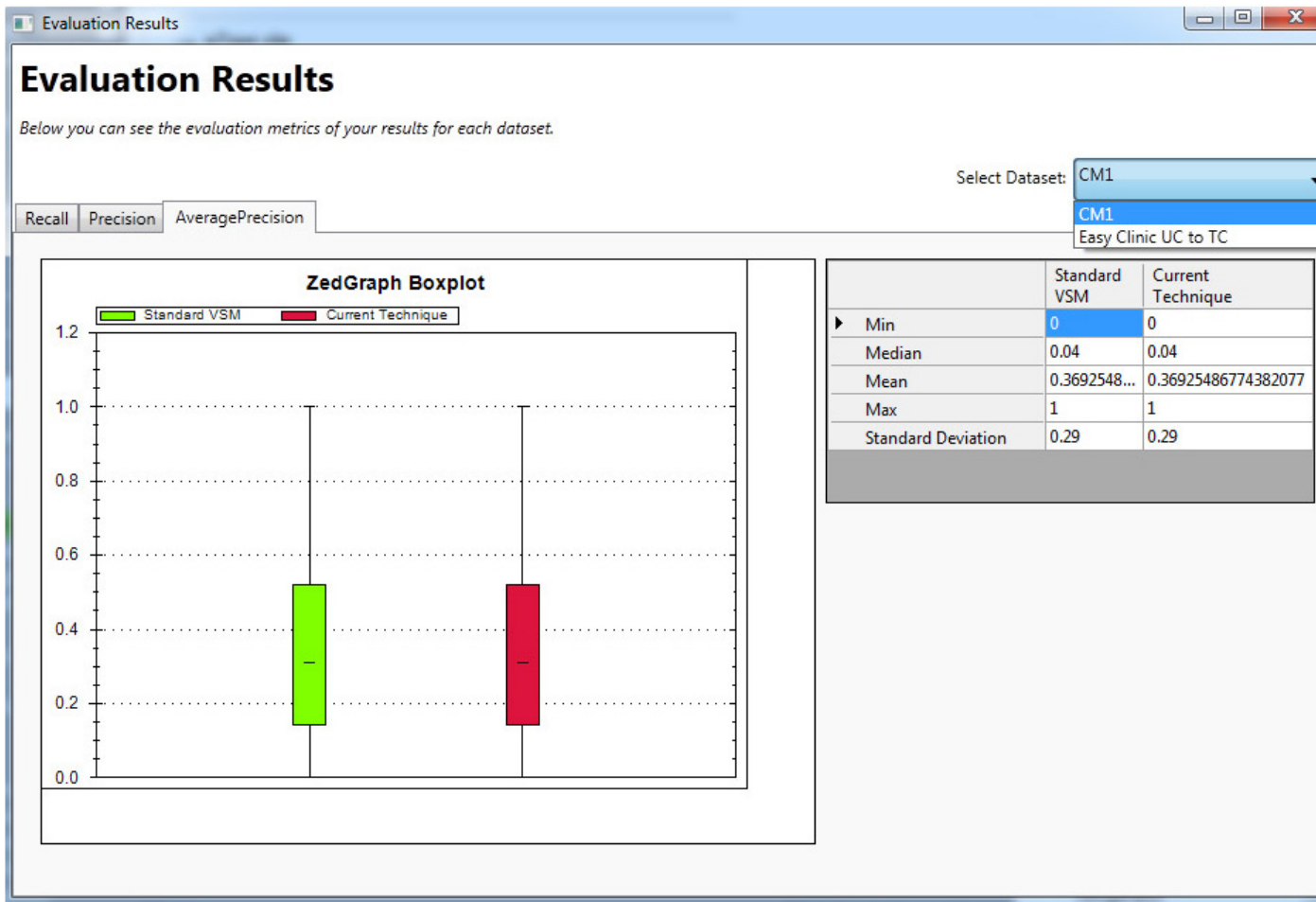
Output	Output as	Type
dictionaryIndex	dictionaryIndex	TraceLabSDK.Types.TLDictionary

At the bottom, an 'Output' window shows a log of events:

Severity	Source	Message
Trace	Tracer Component	Completed component TracerComponent
Trace	Results Metric Computation	Start component ResultsMetricsComponent
Trace	Results Metric Computation	Completed component ResultsMetricsComponent

Status: Experiment done!

Standardized Metrics



Two Demos

- Evan Moritz from the College of William and Mary is going to show how his team used TraceLab to replicate an ICSM 2011 experiment: *On Integrating Orthogonal Information Retrieval Methods to Improve Traceability Link Recovery.*
M. Gethers, D. Poshyvanyk, et.al, College of William and Mary
- Adam Czauderna from DePaul University is going to show how a person can download a contest, insert their own solution into the experimental template, upload their results, and compare them to current baseline results.

TraceLab Timeline



- Currently in beta-use at 6 universities.
- Planned public release in July 2012 in conjunction with launching 5-6 research contests – culminating in The Grand Challenges of Traceability at ICSE 2013.
- Will be open-sourced towards the Fall of 2012.
- <http://www.CoEST.org>



Get Started

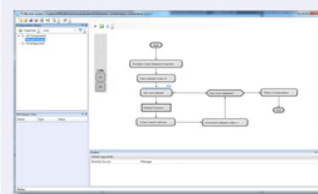
Standard Experiments

Component Developers

- Create New Experiment
- Open Existing Experiment

Recent Projects

- Standard VSM
- Roccio
- ObFiz Contest



About TraceLab

Create your first experiment

Tutorials



Contests Website
(for contest publishing)



Community and Learning Resources
(Wiki, Forum, Tutorials, bug Tracking System)

TraceLab: An Experimental Workbench for Equipping Researchers to Innovate, Synthesize, and Comparatively Evaluate Traceability Solutions

Much of the work described in this talk has been funded by the National Science Foundation under grant number CNS-

Ed Keenan, Adam Czauderna, Greg Leach, Jane Cleland-Huang, Yonghee Shin, Daria Manukian, Shervin Hossein, Derek Hearn. DePaul University

Evan Moritz, Malcom Gethers, Denys Poshyvanyk, College of William and

Jonathan Maletic³, Kent State Univ., Jane Huffman Hayes, University of Kentucky, Alex Dekhtyar, CalTech Poly