

## nformatik-Kolloquium

Der Fachbereich Informatik der Johannes Kepler Universität Linz<sup>1</sup> lädt in Zusammenarbeit mit der Österreichischen Gesellschaft für Informatik (ÖGI) zu folgendem Vortrag ein:

**Prof. Dr. Michael Franz**  
University of California at Irvine

### **The Multicompiler: Software Defenses Using Compiler Techniques**

*Thursday, January 23, 16:15*  
*JKU Linz, Computer Science Building Room S3 218*

#### **Abstract:**

We have been investigating compiler-generated software diversity as a defense mechanism against cyber attacks. This approach is in many ways similar to biodiversity in nature.

Imagine an “App Store” containing a diversification engine (a “multicompiler”) that automatically generates a unique version of every program for every user. All the different versions of the same program behave in exactly the same way from the perspective of the end-user, but they implement their functionality in subtly different ways. As a result, any specific attack will succeed only on a small fraction of targets and a large number of different attack vectors would be needed to take over a significant percentage of them.

Because an attacker has no way of knowing a priori which specific attack will succeed on which specific target, this method also very significantly increases the cost of attacks directed at specific targets.

We have built such a multicompiler which is now available as a prototype. We can diversify large software distributions such as the Firefox and Chromium web browsers

<sup>1</sup> Der Fachbereich (<http://informatik.jku.at>) besteht aus folgenden Instituten:

Anwendungsorientierte Wissensverarbeitung (FAW), Bioinformatik, Computational Perception, Computer-Architektur, Computergrafik, Formale Modelle und Verifikation, Informationsverarbeitung und Mikroprozessortechnik (FIM), Integrierte Schaltungen, Pervasive Computing, Systems Engineering and Automation, Systemsoftware, Telekooperation

or a complete Linux distribution. I will present some preliminary benchmarks and will also address some practical issues such as the problem of reporting errors when every binary is unique, and updating of diversified software.

### **Biography**

Michael Franz is a Professor of Computer Science in UCI's Donald Bren School of Information and Computer Sciences, a Professor of Electrical Engineering and Computer Science (by courtesy) in UCI's Henry Samueli School of Engineering, and the director of UCI's Secure Systems and Software Laboratory. He received the Dr. sc. techn. and the Dipl. Informatik-Ing. ETH degrees from ETH Zurich.

*Einladender:* o.Univ.-Prof.Dr. Hanspeter Mössenböck  
Institut für Systemsoftware

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