

# **2020 IEEE/ACM International Conference on Technical Debt (TechDebt 2020)**

**Seoul, South Korea  
8-9 October 2020**



**IEEE Catalog Number: CFP20P50-POD  
ISBN: 978-1-7281-5315-5**

**Copyright © 2020, Association for Computing Machinery (ACM)  
All Rights Reserved**

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

|                         |                   |
|-------------------------|-------------------|
| IEEE Catalog Number:    | CFP20P50-POD      |
| ISBN (Print-On-Demand): | 978-1-7281-5315-5 |
| ISBN (Online):          | 978-1-4503-7960-1 |

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# 2020 IEEE/ACM International Conference on Technical Debt (TechDebt) TechDebt 2020

## Table of Contents

|   |             |
|---|-------------|
| <b>About TechDebt 2020</b> .....                        | <b>viii</b> |
| <b>About the Keynotes</b> .....                         | <b>ix</b>   |
| <b>Organizing Committee and Program Committee</b> ..... | <b>xi</b>   |

## Research/Experience/Education/Short Papers

|   |    |
|---|----|
| A Systematic Literature Review of Technical Debt Prioritization .....   | 1  |
| <i>Reem Alfayez (University of Southern California), Wesam Alwehaibi (University of Southern California), Robert Winn (University of Southern California), Elaine Venson (University of Southern California), and Barry Boehm (University of Southern California)</i> |    |
| An Empirical Study on Self-Fixed Technical Debt .....   | 11 |
| <i>Jie Tan (University of Groningen, The Netherlands), Daniel Feitosa (University of Groningen, The Netherlands), and Paris Avgeriou (University of Groningen, The Netherlands)</i>   |    |
| Carrot and Stick Approaches When Managing Technical Debt .....  | 21 |
| <i>Terese Besker (Chalmers University of Technology Göteborg, Sweden), Antonio Martini (University of Oslo, Norway), and Jan Bosch (Chalmers University of Technology Göteborg, Sweden)</i>   |    |
| Detecting Bad Smells with Machine Learning Algorithms: an Empirical Study .....   | 31 |
| <i>Daniel Cruz (Federal University of Minas Gerais, Brazil), Amanda Santana (Federal University of Minas Gerais, Brazil), and Eduardo Figueiredo (Federal University of Minas Gerais, Brazil)</i>   |    |
| Experiences with Technical Debt and Management Strategies in Production Systems Engineering .....   | 41 |
| <i>Laura Waltersdorfer (SBA Research), Felix Rinker (TU Wien), Lukas Kathrein (TU Wien), and Stefan Biffel (TU Wien)</i>  |    |
| How Junior Developers Deal with Their Technical Debt? .....   | 51 |
| <i>Fabian Gilson (University of Canterbury, New Zealand), Miguel Morales-Trujillo (University of Canterbury, New Zealand), and Moffat Mathews (University of Canterbury, New Zealand)</i>   |    |

|   |     |
|---|-----|
| On Energy Debt: Managing Consumption on Evolving Software .....   | 62  |
| <i>Marco Couto (HasLab/INESC TEC &amp; Universidade do Minho), Rui Pereira (C4 - Centro de Competências em Cloud Computing (C4-UBI), Universidade da Beira Interior), Daniel Maia (HasLab/INESC TEC &amp; Universidade do Minho), and João Saraiva (HasLab/INESC TEC &amp; Universidade do Minho)</i>   |     |
| The Hidden Cost of Backward Compatibility: When Deprecation Turns into Technical Debt - An Experience Report .....  | 67  |
| <i>Anders Sundelin (Blekinge Institute of Technology, Sweden), Javier Gonzalez-Huerta (Blekinge Institute of Technology, Sweden), and Krzysztof Wnuk (Blekinge Institute of Technology, Sweden)</i>   |     |
| The Prevalence of the Technical Debt Concept in Serbian IT Industry: Results of a National-Wide Survey .....  | 77  |
| <i>Vladimir Mandić (University of Novi Sad, Serbia), Nebojša Taušan (INFORA Research Group, Serbia), and Robert Ramač (University of Novi Sad, Serbia)</i>  |     |
| Towards Collaborative Technical Debt Management in Systems of Systems .....   | 87  |
| <i>Johann Schütz (OFFIS - Institute of Information Technology) and Jorge Marx Gómez (Carl von Ossietzky - University of Oldenburg)</i>  |     |
| Towards Microservice Smells Detection .....   | 92  |
| <i>Ilaria Pigazzini (University of Milano-Bicocca), Francesca Arcelli Fontana (University of Milano-Bicocca), Valentina Lenarduzzi (Lappeenranta-Lahti University), and Davide Taibi (Tampere University)</i>   |     |
| Trade-Offs in Managing Risk and Technical Debt in Industrial Research Labs: An Experience Report .....  | 98  |
| <i>Francois Gauthier (Oracle Labs, Australia), Alexander Jordan (Oracle Labs, Australia), Padmanabhan Krishnan (Oracle Labs, Australia), Behnaz Hassanshahi (Oracle Labs, Australia), Joern Guy Suess (Oracle Labs, Australia), Sora Bae (Oracle Labs, Australia), and Hyunjun Lee (Oracle Labs, Australia)</i>   |     |
| What are the Practices Used by Software Practitioners on Technical Debt Payment? Results from an International Family of Surveys .....  | 103 |
| <i>Boris Pérez (University of Los Andes, Colombia), Camilo Castellanos (University of Los Andes, Colombia), Darío Correal (University of Los Andes, Colombia), Nicolli Rios (Federal University of Bahia, Brazil), Sávio Freire (Federal University of Bahia, Brazil), Rodrigo Spínola (Salvador University, Brazil), and Carolyn Seaman (University of Maryland, US)</i> |     |

## Tools Track Papers

|   |     |
|---|-----|
| Skuld: A Self-Learning Tool for Impact-Driven Technical Debt Management .....   | 113 |
| <i>Josep Burgaya Pujols (Skuld Technologies), Pieter Bas (Skuld Technologies), Silverio Martínez-Fernández (Universitat Politècnica de Catalunya &amp; Fraunhofer IESE, Germany), Antonio Martini (Skuld Technologies &amp; University of Oslo, Norway), and Adam Trendowicz (Fraunhofer IESE, Germany)</i> |     |

|   |            |
|---|------------|
| Software Archinaut: A Tool to Understand Architecture, Identify Technical Debt Hotspots<br>and Manage Evolution .....         | 115        |
| <i>Humberto Cervantes (Universidad Autónoma Metropolitana Iztapalapa) and<br/>Rick Kazman (University of Hawaii at Manoa)</i> |            |
| <b>Author Index</b> .....   | <b>121</b> |