RESEARCH PROPOSAL: 2024 CO RSCA Faculty Mini-Grants

Title: **Identifying Regulatory Red Flags: A Linguistic and Analytical Approach to Assessing Risk in Initial Coin Offering (ICO) Whitepapers**

Principal Investigator: Dr. Carrie Shu Shag
Assistant Professor of Business Law
College of Business Administration

Co-Principal Investigator: Dr. Denis Iurchenko

Amount Requested: $ 10,000

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Identifying Regulatory Red Flags: A Linguistic and Analytical Approach to Assessing Risk in Initial Coin Offering (ICO) Whitepapers

Project Narrative

In the past decade Initial Coin Offering (ICOs), an alternative way of fundraising for start-up companies, have amassed significant funds. At first, ICOs began as a mechanism among the blockchain community to attract financial support for new ideas and initially involved small amounts of money and small numbers of investors. However, as amounts raised have increased, so has interest in using ICO structures to raise money for ever broader purposes and among ever wider groups of investors. Before ICO became a dominant form of capital raising, prominent examples demonstrate that ICOs are not without flaws: some ICOs have been unmasked as scams and Ponzi schemes, while others, including some of the largest to date, have seen governance concerns come to the fore and financial regulators making inquiries. There has been a wide range of initial regulatory responses: from an outright ban of ICOs in the case of China and South Korea, to warning notices by European, American and other regulators reinforced by statements that securities laws could well apply and registration be necessary, to more supportive approaches in other jurisdictions, with Singapore, Hong Kong and to a lesser extent Switzerland leading the way. This interdisciplinary project draws on a rapidly growing database of documentation for whitepapers associated with 220 ICOs. The documents typically are those made available during the launch of the ICO and were gathered from thirty websites functioning as ICO repositories. By identifying count of terms associated with positive/exaggerating tones as coded by LIWC and mapping out their relationship with signals of ICO failures (less than $1000 volume raised in three months, average shorter than 15 month time span, consumer complaint records, fraud enforcement records etc.), we are trying to identify regulatory red alerts in ICO whitepapers that might be of policy significance.

Background and Significance

In the evolving landscape of start-up financing, Initial Coin Offerings (ICOs) have emerged as a prominent alternative to traditional funding methods. Originally a niche mechanism within the blockchain community, ICOs have rapidly expanded, attracting significant funds from a broad spectrum of investors. Despite their popularity, ICOs have faced scrutiny due to instances of fraud, scams, and governance issues, prompting diverse regulatory responses globally. This project aims to dissect the complex dynamics of ICOs by analyzing whitepapers associated with 220 ICOs, which are pivotal documents released during the ICO launch.

Objectives and Rationale

1. *Analytical Assessment of ICO Whitepapers*: To rigorously analyze a substantial database of whitepapers from 220 ICOs, applying linguistic analysis tools such as LIWC (Linguistic Inquiry and Word Count) to detect patterns of positive or exaggerating tones.
2. *Identification of Risk Indicators*: To identify specific linguistic and thematic elements in ICO whitepapers that correlate with higher risks of failure or fraudulent activity. This involves mapping the relationship between language use and indicators of ICO failures, such as low fundraising volumes, short operational durations, consumer complaints, and fraud enforcement records.
3. *Development of Regulatory Guidelines*: To develop a set of guidelines or indicators that regulators, investors, and other stakeholders can use to assess the potential risks associated with ICOs. To inform policy-making by providing empirical evidence and analysis that could guide the regulatory approach to ICOs. This might involve suggesting how regulators can more effectively identify and act upon early warning signs of problematic ICOs.

Methodology:

A variety of research methodologies will be employed to ensure the successful delivery of project deliverables, which mainly consists of:

1. **Data Collection**: Gathering whitepapers from 220 ICOs from several designated websites where ICO whitepapers are normally posted before initial fundraising (e.g., ICO Bench, Twitter(X), CoinTelegraph);

2. **Linguistic Analysis**: LIWC will be utilized to identify and quantify specific linguistic patterns, based on reference points link to "tones" provided by several research dictionaries;

3. **Correlation Analysis**: A multivariable linear regression will be used as a first step. Linguistic patterns generated by LIWC analysis will be regressed against failure indicators like fundraising volumes, operational durations, consumer complaints, and enforcement actions etc. The modelling may need to be improved as data analysis progresses;

4. **Development of Indicators**: As one final step, findings will be synthesized to create a set of predictive indicators.

Proposed Timeline:

The project will take place between March and September 2024, with possible extension in the writing phase which expects to complete by the end of 2024.

Research Phase	**Timeline**
Data collection and initial analysis (most parts of data collection have been completed at the time this application is made);	March-April 2024
Regression and modeling, in-depth analysis of the data	May-June 2024
Synthesis of findings and development of indicators:	July-August 2024
Writing, finalization of the research report and dissemination of findings	September 2024

Expected Outcomes:

1. **Risk Assessment Framework**: Establishment of a robust framework for assessing the risk level of ICOs based on linguistic and financial indicators identified in the study.
2. **Policy Recommendations**: Formulation of recommendations for policymakers and regulatory bodies, offering guidance on how to approach ICO regulation based on empirical findings.
3. **Academic Contribution**: Contributing to academic literature in the fields of finance, technology, and regulation, particularly in the context of emerging fundraising mechanisms like ICOs, in the form of publications of high impact academic papers.

Connection to Instructional Duties

This project will enrich the PI's teaching by integrating cutting-edge research into the curriculum of existing course, such as FRL 4033 – Laws of Financial Transactions, thus enhancing the learning experience for students. It exemplifies the application of theoretical knowledge to real-world financial phenomena, aligning with the Teacher-Scholar model.

Both the PI and Co-PI of this project has significant research experience and experience mentoring research student. The PI – Dr. Carrie Shang, is a regular faculty mentor in the RSCA program and has been recognized a as a One Star Mentor. She has constantly created opportunities to engage Cal Poly Pomona students in suitable research opportunities.

Potential for Obtaining External Funding

Current no external funding has been sought by the team. Noentheless, the project's timeliness of subject matter, innovative and interdisciplinary research approach and potential real world impact make it a strong candidate for future external funding. Certain grants at the NSF (Law and Society Program), Law and Society Association and the Academy of Management will be checked.

Student Involvement

One undergraduate student Kevin Foyet has been recruited to assist with data collection and analysis of the project. Depending on the result of this mini-grant application, more students might be recruited. Students participating in this project will gain hands-on experience in multiple academic disciplines such as finance, law and entrepreneurship, by exposing to different methods of data analysis, application of linguistic tools, and understanding of regulatory frameworks in a rapidly evolving cryptocurrency area. This experiential learning opportunity aligns with the Teacher-Scholar model in addition university's commitment to improving students “learning by doing” via integrating research and education, enhancing student success.

Appendix: CVs of Team Members

Carrie Shu Shang
Assistant Professor of Business Law
Cal Poly Pomona, College of Business Administration
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Education

Juris Doctor, University of Southern California Gould School of Law, 2012

- *Activities*: American Jurisprudence Award in Constitutional Law Staff Editor of Southern California Review of Law and Social Justice (RLSJ), Research Fellow of UCSD Laboratory on International Law and Regulation

B.A (Honors), **Molecular and Cell Biology, University of California, Berkeley,** 2008

B.S. (Distinction) Environmental Sciences, University of California, Berkeley, 2008

Bar Admissions

California (2019); People's Republic of China (2015); New York (2013)
Admitted to the United States District for the Eastern District of New York (2021)

Publications (Peer-Reviewed Journals)

- S. Yaccoub & C.S. Shang, "Judicial Cooperation as BRI Transnational Dispute Settlement Order? Perspective from the Middle Eastern States", *European Journal of East Asian Studies* 21 (3) (2022)
- C.S. Shang & L. Balde, "Searching for China's *Lex Mercatoria* through Commercial Dispute Resolution", *Justice System Journal* 42(2) (2021)
- C.S. Shang, "U.S.-China Transnational Trade Law in a Time of Crisis", *Indiana Journal of Global Legal Studies* 28(2) (2021)
- C.S. Shang & W. Shen, "Beyond Trade War: Reevaluating Intellectual Property Bilateralism in the US-China Context", *Journal of International Economic Law* 24 (1) (2021)
- C.S. Shang, "Access to Justice for the Chinese Consumer – Handling Consumer Disputes in Contemporary China" (*Book Review*), *Conflict Resolution Quarterly* 38 (1-2) (2020)
- D. Iurchenko, J. S. Petty, C.S. Shang and J. Block, "Enabling Online Equity Crowdfunding: Understanding the Approval Process Across Four Countries", *International Review of Entrepreneurship* 18 (2) (2020)
- C.S. Shang & W. Shen, "Embracing *Lex Mercatoria* Through Resistance: Trade Customs, ADR and Laws Governing Commercial Relationship in China", *Asia Pacific Law Review* 28 (1) (2020)
- S. Shang & W. Shen, "Trajectory of Centralized Judicial Control in the Context of Tackling Local Protectionism in Enforcing Foreign Arbitral Awards in China", *The China Quarterly* (March 2020)
- S. Shang & W. Shen, "When the State Sovereign Immunity Rule Meets Sovereign Wealth Funds in the Post Financial Crisis Era: Is There Still a Black Hole in International Law?" *Leiden Journal of International Law* 31(4) (2018)

Publications (Non-Peer Reviewed Journals and Book Chapters)

- N. Masumy & C.S. Shang, "Aligning Right to Regulate with Innovative Investment Treaty Drafting: Ushering into the New Era of the Implementation of Sustainable Development Principles", *Journal of Dispute Resolution* (forthcoming Spring 2023)

- W. Shen & C.S. Shang., "China's Treaty Practices: Politicization of Law or Legalization of Politics?", in *Cambridge Handbook of China and International Law* C.Y. Cai & I. de la Rasilla (eds.), Cambridge University Press, 2022
- J. Chaisse & S. Shang, "Promoting a Greater Use of Mediation or Hybrid Dispute Resolution in the EU: The Resolution of International of International Commercial and Financial Disputes", in *Multi-Tier Dispute Resolution* A. Reyes & W. Gu (eds.), Cambridge University Press, 2021
- C. S. Shang & W. Guo, "The Rise of ODR-Led Justice in China – An Initial Look", *ANU Journal of Law and Technology* 1 (2) (2020)
- C.S. Shang, W. Guo & C. Mak, "Two Paths Leading to the Same End? A Discussion of Development and Regulation of Online Mediation under the COVID-19 in China and the United States", *World Arbitration and Mediation Review* (October 2020)
- S. Shang, "Implementing Investor-State Mediation in China's Next Generation BIT", in *China-European Union Investment Relationships* J. Chaisse (ed.), Edward Elgar, 2018

Selected Research Awards and Fellowships

- California State Polytechnic University Pomona, Faculty Mentor Research Stars (STARS) Tier 1 Awardee, 2022
- California State Polytechnic University Pomona, Golden Leaves Author Award, 2022
- California State Polytechnic University Pomona SPICE Award – Instructional Innovation, 2021
- Invited Scholar, American Business Law Journal (ABLJ) Invited Scholar Colloquium, Academy of Legal Studies, 2020
- Recipient, Hong Kong PhD Research Fellowship, Research Grants Council (RCG) of Hong Kong, 2018/19
- "Promoting Dispute Resolution in China", United Kingdom Foreign and Commonwealth Office's Prosperity Fund China Prosperity Strategy Program Fund (SPF) Recipient July 2015
- "Investment Protection in Shanghai Free Trade Zone", Sponsored by China Ministry of Education Humanities and Social Sciences Young Researchers Fellowship July 2014
- Tata International Social Entrepreneurship Scheme (TISES) Fellow, Center of South Asia Studies, University of California, Berkeley April 2008

Academic and Professional Affiliations

- Co-Chair, Private International Law Interest Group, American Society of International Law (Elected Term 2021-2024)
- Chair, Committee Member, Silicon Valley Arbitration and Mediation Center
- UDRP Panelist, Czech Arbitration Court, Hong Kong International Arbitration Centre, Milan Intellectual Property Dispute Resolution Center
- Arbitrator, Qatar International Center for Conciliation and Arbitration, DIFC-LCIA
- Member, ICANN Generic Names Supporting Organization (GNSO) URS Rule Review Committee
- Visiting Research Fellow, University of California Berkeley Centre for the Study of Law and Society, 2016

Languages

- Proficient in Mandarin, English and Cantonese, general working knowledge in Spanish

Dr. Denis Iurchenko

Bio: Dr. Denis Iurchenko obtained his Ph.D. in Management from the University of Lausanne, Switzerland. Prior to pursuing his doctoral degree, he worked as a program manager and senior program manager at Open Innovations Forum in Moscow, Russia. By working together with top Russian and international executives, entrepreneurs, investors, and government officials, he has acquired extensive experience in promoting Entrepreneurship and Innovation both at the national and international levels.

Dr. Iurchenko's research focuses on equity crowdfunding, and, more broadly, the digitalization of entrepreneurial finance. His research was presented at leading scientific symposiums focused on Entrepreneurship, such as the Babson College Entrepreneurship Research Conference and the United States Association for Small Business and Entrepreneurship Conference. In recognition of his scholarly efforts, he had a visiting scholar appointment at the Scandinavian Consortium for Organizational Research (SCANCOR) at Stanford University.

At Cal Poly Pomona, Dr. Iurchenko teaches the Introduction to Entrepreneurship course.

Kevin Foyet
3801 W. Temple Avenue, Pomona, CA 91768
909-927-1781
kfoyettowa@cpp.edu

Education

• **California State Polytechnic University of Pomona Exp-grad. *2025***

Bachelor of Science - Computer Engineering minor Computer Science & Applied mathematics
***GPA**: 3.75* **--- Relevant courses**: Calculus (I, II, III), Linear Algebra & Diff Equations, Disc Struct, Java Prog, Digital Logic Design, C++ Programming, Circuit Analysis, Java, C#, Newtonian Physics, Electromagnetism.

Work Experience

Co-Founder - Care Ai – *Remote -- ongoing* Jan 2023 – Present

• Designed the UI of the app using Figma and photoshop for the logo.
• Using Firebase, I implemented User authentication and stored relevant data.
• Currently using an API to provide a list of illnesses corresponding to the input symptoms by User.

Software Engineer Intern – Trace Up - *Huntington Beach, CA* ---------- GitHub/Trace-Up-Code---------**May 2022- Present**

• Developed highly efficient Python algorithms for automation and improved operational speed for a total of 20 sensors.
• Utilized NumPy/computer vision to create Python scripts capable of accurately identifying misalignment issues in 2 cameras.
• Effectively managed and oversaw hardware assets exceeding a total value of $1 million.

Millennium Fintech Challenge – Quant Research - *Miami, Florida* April 2023

• Collaborated with top university students and Millennium Executives to build and optimize investment portfolios.
• Enhanced trading algorithms using stochastic calculus concepts on continuous time series, maximizing returns while minimizing risk.
• Selected as one of 24 participants out of a highly talented pool.

MongoDB Summit – Virtual May 2023

• Participated in career development workshops and technical sessions led by industry experts, covering topics such as building personal brands, cloud technology, and database management.
• Engaged with leading industry engineers and gained insight into emerging trends and innovations in the cloud database industry.
• Expanded my knowledge of NoSQL databases, cloud technology, and other relevant tools and technologies through attending informative sessions and hands-on workshops.

IBM Accelerate – *Remote* June 2022 -Aug 2022

• Developed a diverse skill set and cultivated a mindset geared towards achieving success in the professional realm.
• Conducted in-depth research on the profound influence of Quantum computing in the field of engineering.
• Engaged in insightful discussions with prominent industry leaders about IBM's pioneering Quantum computer.

Treasurer - NSBE (National Society of Black Engineers), Cal Poly – *Pomona, CA* June 2022 - May 2023

• Overseeing a budget of approximately $6,000 for the club's special events, monitoring incoming and outgoing transactions.
• Meticulously coordinating documentation of travel arrangements for occasions such as the Fall Regional Conference (FRC).
• Attentively handling the procurement process for vendors and the accurate disbursal of reimbursement funds.

Vice President – Print Algo, Cal Poly – Pomona, CA **Jan 2023** – **May 2023**
• Managing meetings and club of 78 students majoring in Computer science and Engineering

• Teaching fundamentals concepts of Data Structures and Algorithms
• Increasing the numbers of CPP students attaining jobs at big tech companies such as Google, Apple, Facebook

Research Projects
Software Engineer- *UMBRA Avionics* – **Cal Poly *Pomona, CA*** ---------- GitHub/Kalman-Filter-Code ---------- **Jan 2023 – Present**
• Using NumPy Library in Python and embedded systems to work on Navigation core CPU for a rocket reaching 100k ft in the Mesosphere.
• Employing Linear Algebra and Multidimensional Calculus to develop a Kalman Filter algorithm for predicting and updating the rocket's state using past data points.
• Implementing AI code for the Kalman filter in Python with mathematical modeling algorithms using matrices and 3D vectors.

Software Engineer Team Lead – *Bronco Space* – **Cal Poly** – ***Pomona, CA*** --------- GitHub/Bronco-Device---------- **Sept 2021 - Dec 2022**
• Designed a device that could calculate light pollution in the form of a payload that could fit on a balloon and can withstand atmospheric pressure, and pressure changes to be sent 100,000 ft in the atmosphere.
• Organized Teamwork and efficiency by making sure each section of the work is assigned to a designated team member and that the work of each team member is in within the deadlines, all through meetings and PowerPoint presentations.

Quantitative Researcher Assistant – *Professor Tim Lin – Pomona, CA* March 2023 – Present
• Currently researching Machine learning in correlation to Computational Finance on Continuous Time Series with Dr. Tim Lin
• Designing a Kalman Filter and Momentum Trading strategy for non-Gaussian and non-Linear graphs
• Using Oanda as broker and Meta trader 4 platform for back testing the strategy

Engineering Skills
• **Software:** Visual studio code| Eclipse | Firebase Database| MATLAB | Figma | Eagle CAD | GitHub | Algo Trading Bot
• **Programming Languages:** Python | C++ | Java | C# | Dart-Flutter | R | Verilog | Latex

Awards & Achievements
• President & Dean' List
• Edison Scholar – Scholarship Recipient **April 2023**
• Rio Tinto Scholar – Scholarship Recipient **August 2022**