Thesis Proposal
Network Analysis of Venture Capital and Accelerator Ecosystems

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Outline

Motivation

- Venture capital (VC) and accelerator ecosystems are crucial for startup financing
- Complex network relationships between VCs, accelerators, and startups
- Limited understanding of structural patterns and matching mechanisms
- Need for quantitative analysis of ecosystem dynamics

Problem Statement

Key Questions

How do network structures emerge between venture capitalists and accelerators, and what patterns govern their investment relationships?

- Current literature focuses on individual actor behavior
- Gap in understanding ecosystem-level network structures
- Limited application of network theory to VC-accelerator relationships

Literature Review

Relevant Topics

- **Network Theory**: Structural analysis of relationships
- **Bipartite Networks**: Two-mode networks with distinct node types
- **Assortative Matching**: Tendency for similar entities to connect
- **Nestedness**: Hierarchical interaction patterns

Existing Gaps

- Most studies focus on startup-VC relationships
- Limited analysis of VC-accelerator intermediary networks
- Lack of structural complexity measures in ecosystem analysis
- Need for empirical validation of theoretical matching models

Path 1: Assortative Matching

- $\times$ Complex theoretical requirements
- $\times$ Limited data availability
- $\times$ High methodological barriers
- ? Uncertain feasibility

Path 2: Bipartite Network Analysis

- $\checkmark$ Available data
- $\checkmark$ Established methods
- $\checkmark$ Novel application
- $\checkmark$ Original contribution

Methodology - Potential Research Directions

Proposed Path - **Bipartite Network Approach**

- **Network Construction**: VCs and accelerators as distinct node types
- **Edge Definition**: Co-investment relationships
- **Structural Analysis**: Clustering, centrality measures
- **Nestedness Calculation**: Hierarchical organization patterns
- **Complexity Metrics**: Network complexity indices

Preliminary Analysis Results (Ex2)

- Clustering analysis reveals distinct investment communities
- Evidence of hierarchical structure in VC-accelerator relationships

Expected Contributions

Theoretical

- Novel application of bipartite network theory to VC ecosystems
- Framework for understanding intermediary relationships
- Extension of nestedness concepts to financial networks
- Integration of complexity theory with ecosystem analysis

Practical

- Insights for VC investment strategy optimization
- Accelerator positioning and partnership strategies
- Policy implications for ecosystem development
- Risk assessment and diversification guidance

Timeline and Next Steps

- **Weeks 1-2**: Data collection and preprocessing
- **Weeks 3-5**: Network construction and basic analysis
- **Weeks 6-7**: Nestedness and complexity calculations
- **Weeks 8-10**: Results interpretation and writing
- **Weeks 11-12**: Thesis completion and defense preparation

Questions for Discussion

1. Is the bipartite network approach the most promising direction?
2. What additional data sources should be considered?
3. How can we ensure the originality of complexity measures?
4. What are the key theoretical frameworks to incorporate?
5. How can we validate our network findings?

Questions and Discussion