

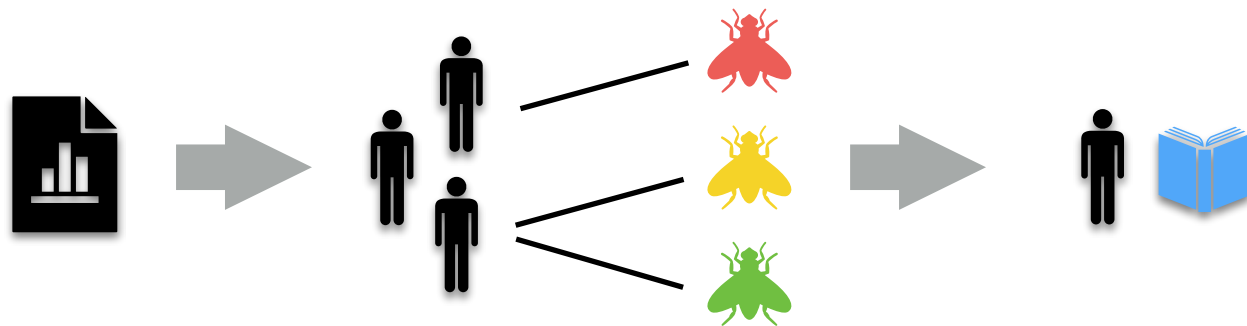
Developer-bug type networks in bug triage

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www.carleton.ca/tim
www.carleton.ca/tim/tim.pdf

- There is not much work on social network analysis in the context of bug triage in open source projects
- Goal of **bug triage** is to determine bugs that require most attention and assign them to developers
- Examine developer-bug type network using historic contribution patterns and identify core contributors as well as subject matter experts on different bugs

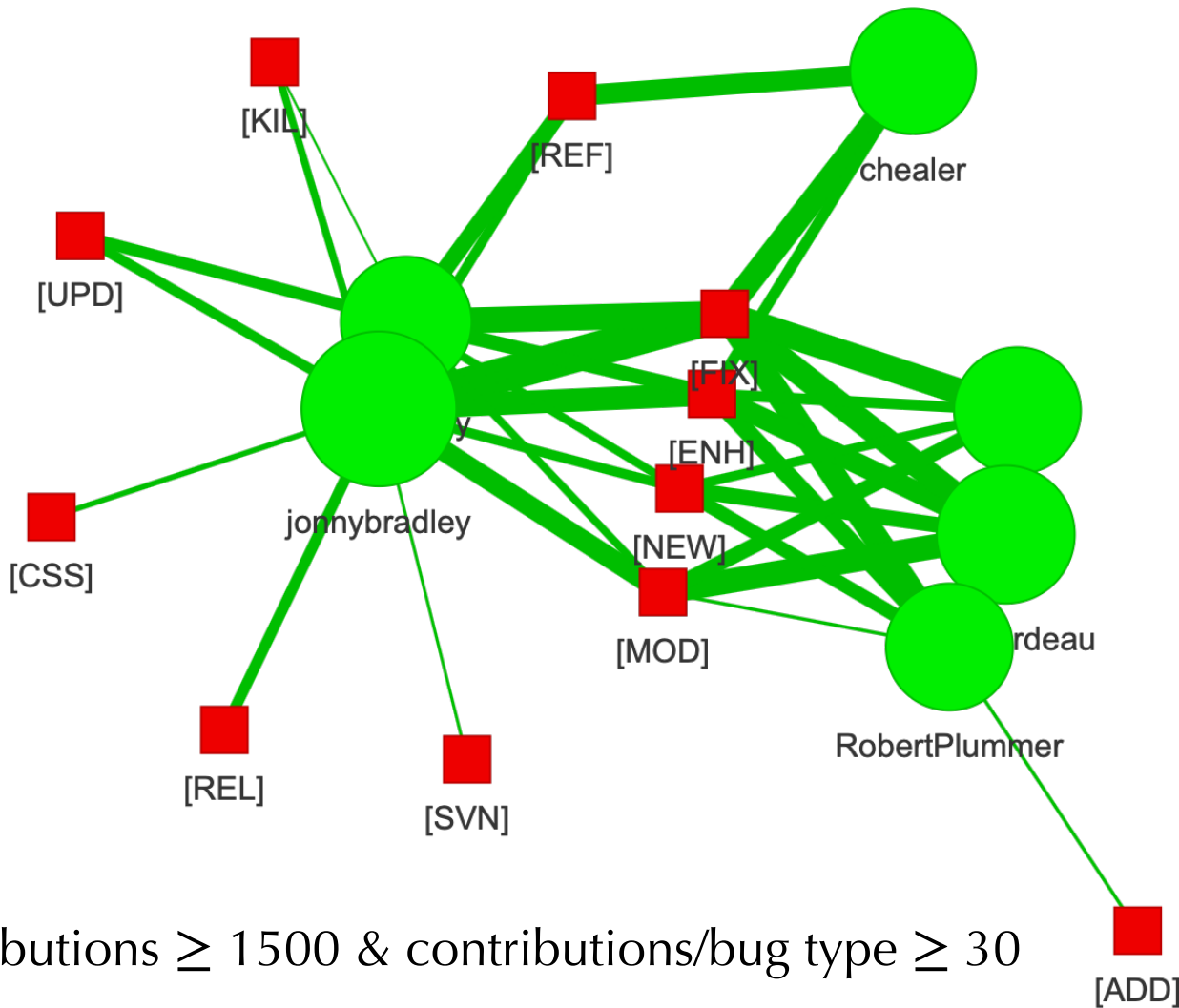


- Medium-sized open source project (Tiki Wiki) with 20 years of history, and around 150 developers
- Mined the **commit log** to gather information on the types of bugs and the developers handling them

Contributor	Bug type	Contributions per bug type	Start time	End time
Alice	[FIX]	4500	2009	2019
Bob	[ENH]	40	2012	2016
	...			

[illegible]

Developer-bug type network

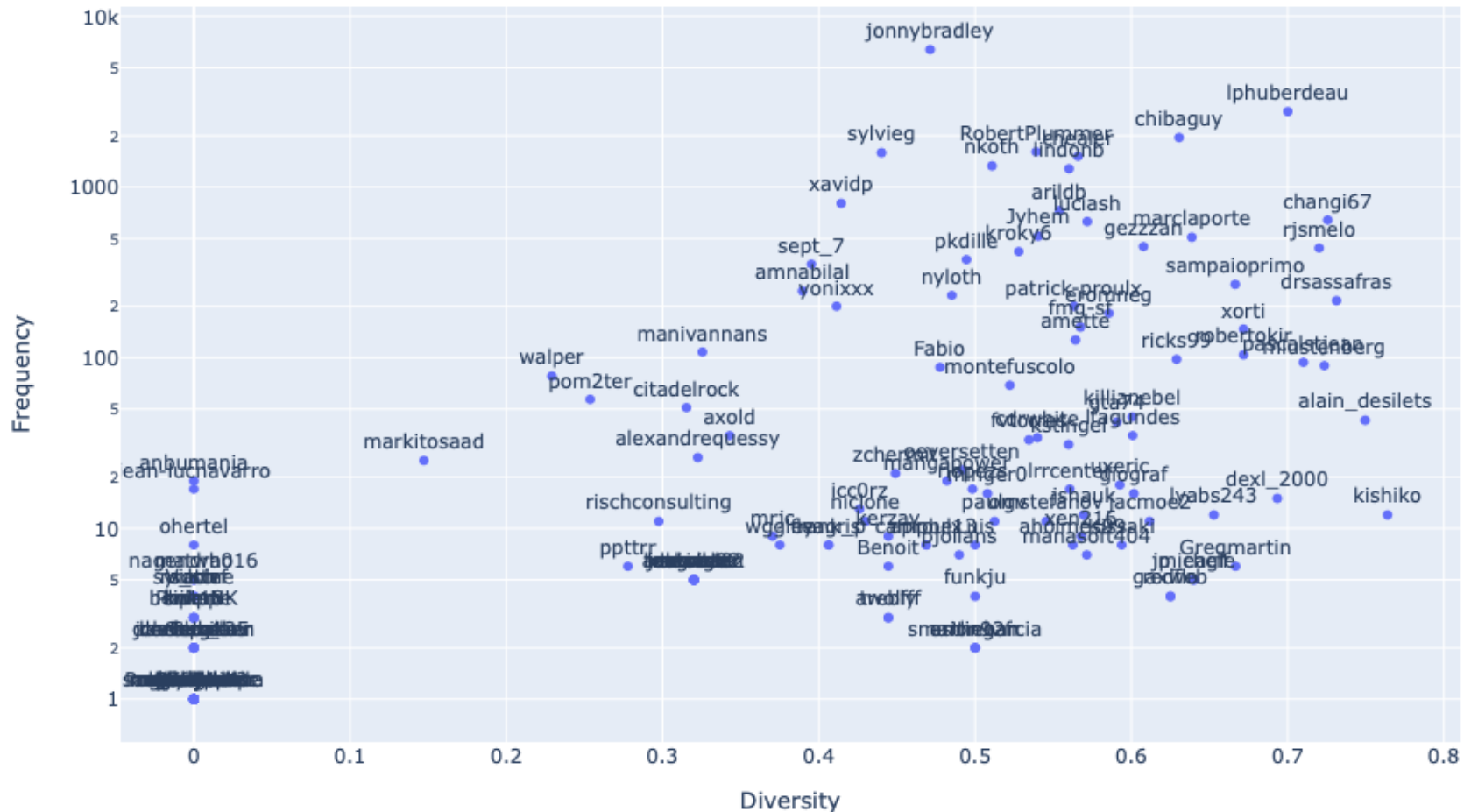


Total contributions ≥ 1500 & contributions/bug type ≥ 30

Diversity vs frequency



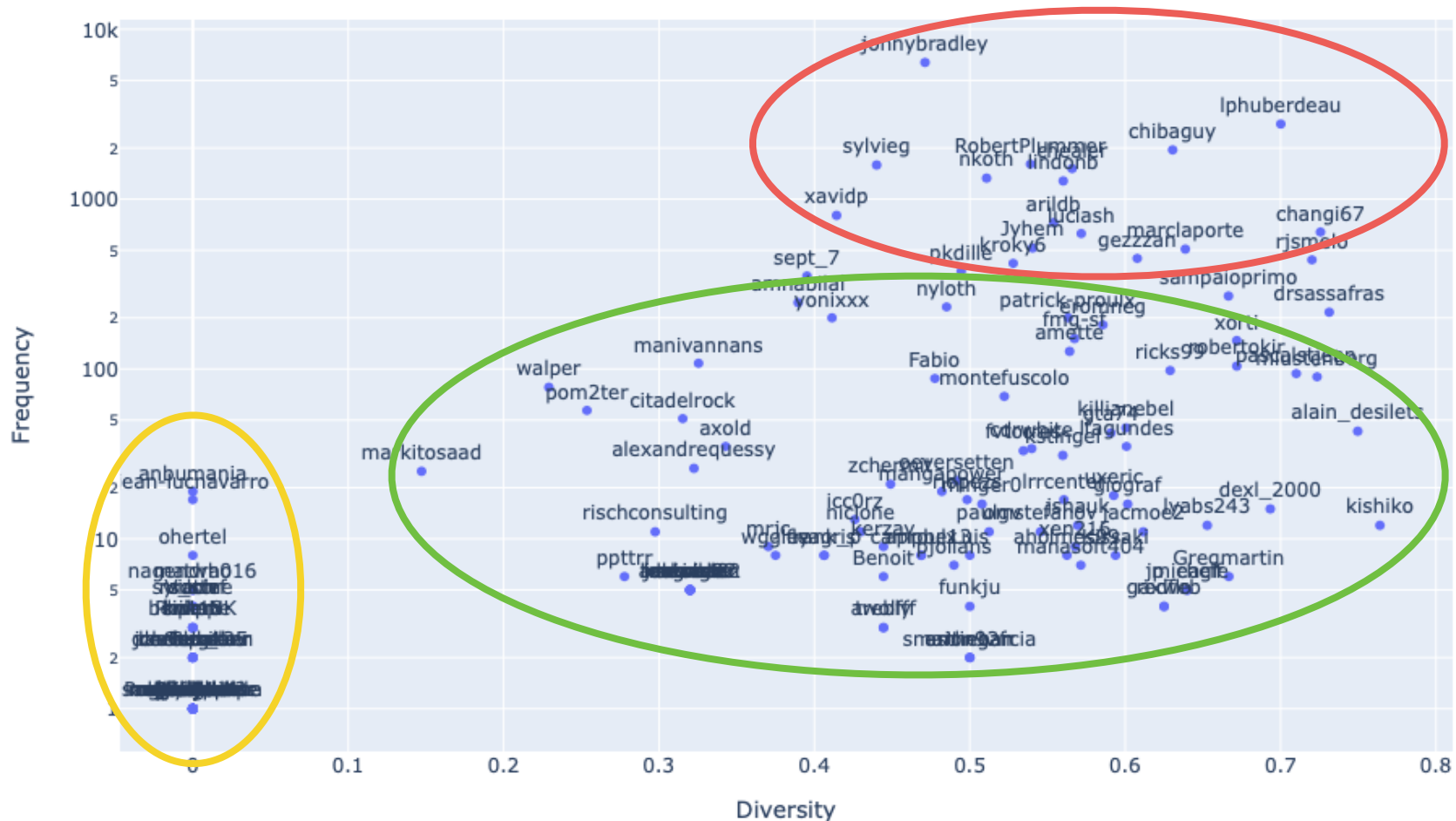
Blau's diversity index: $1 - \sum_i p_i^2$



Diversity vs frequency



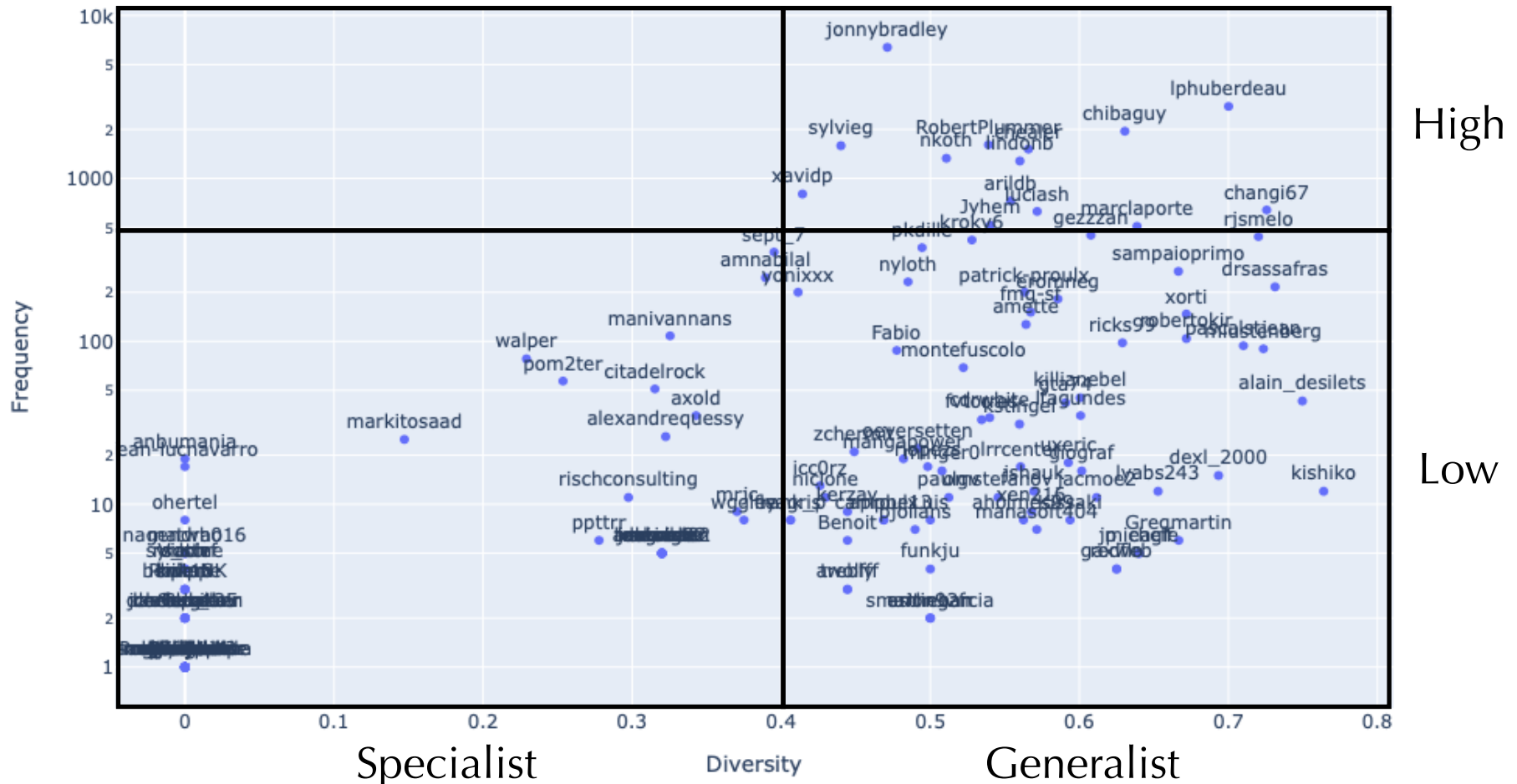
Blau's diversity index: $1 - \sum_i p_i^2$



Diversity vs frequency



Blau's diversity index: $1 - \sum_i p_i^2$



- By mining historical contributions patterns to bugs types we can identify core contributors, and separate **generalists** (high div.) from **specialists** (low div.)
- Outcomes can be used in practice to develop better ways to **help assign bugs** to developers