

JIVe: Just-In-Time Verification For High Performance Compilers

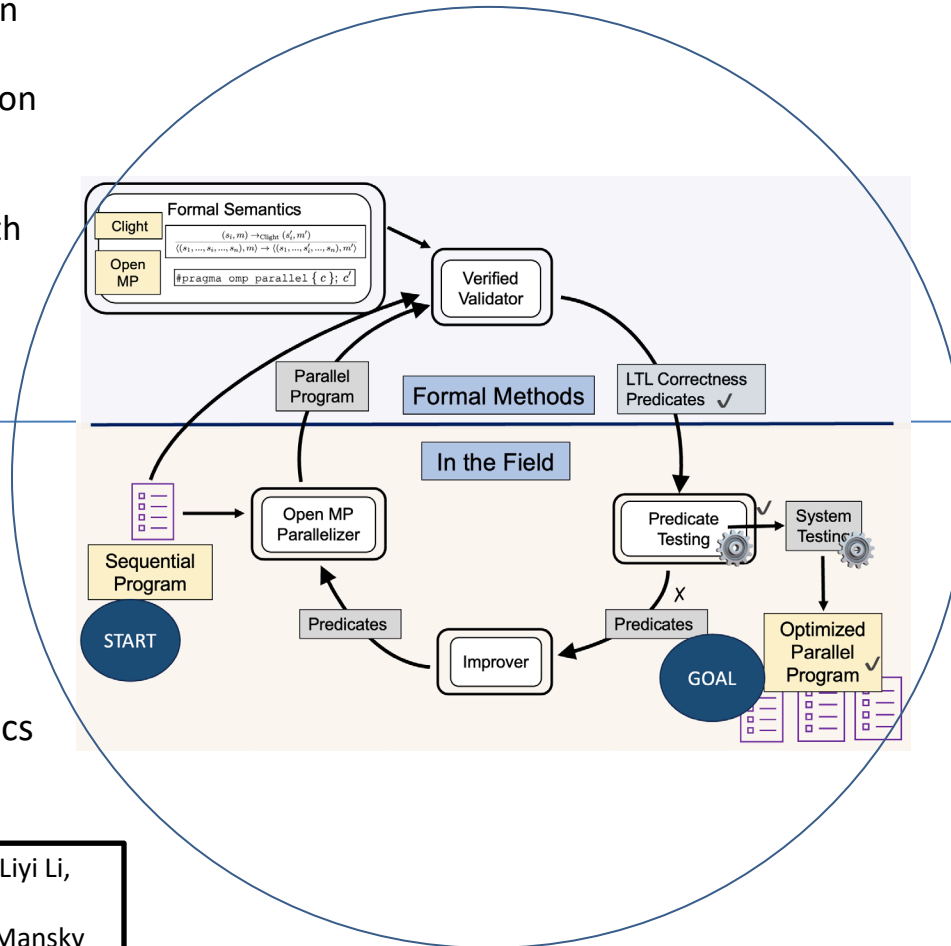


Challenge:

- Automatic parallelization has been unreliable
- Need for formal validation of sequential to parallel transformations
- Lack semantics for C with OpenMP

Solution:

- Develop translation validator for parallel programs
- Define formal semantics for C with OpenMP



Scientific Impact:

- Extend formal verification to High Performance Computing
- Automatic parallelization with strong guarantees
- Improvement of AI-assisted Parallelization

Broader Impact and Broader Participation:

- Bring HPC and formal verification communities together
- Incorporate verification concepts in HPC courses
- Undergraduate research projects
- HPC formal methods training workshops

CCF2422127, Iowa State University, Liyi Li,
Myra Cohen, Ali Jannesari
CCF2422128, UIC, Chicago, William Mansky

