



Growing the PyG Community To Learn and Build Together



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PyG Community At A Glance

Leading Graph Network Library for BOTH industry and research

- 2.8k+ Forks
- 15.6k Github stars
- 43k clones, 100k monthly downloads
- 1600 research papers using PyG
- 6k contributions per month
- 300+ active contributors
- 80+ GNN architectures
- 200+ benchmark datasets
- Extendable via a **message passing interface**
- Support for new techniques
- Scalable and easy to use

“GNNs provide a natural extension to consider our network’s topology, and heterogenous learning allows me to model complex and dynamic systems.

I chose PyG for my application because of its ease of use, community, and features.”

-Airbus Data Science Team



Common Use Cases of PyG Today

- **Financial Transactions**
 - Build a graph to understand financial entities and their interactions
 - Fraud and risk detection using anomaly/outlier detection
 - Validate smart contracts on existing blockchain
- **Security**
 - Identify compromised systems & network intrusion
- **Personalization and Recommendation**
 - Recommend content or items to a user
 - Predict next best purchase for a given user
- **Know-your-customer**
 - Customer loyalty and retention, predict churn and LTV
- **Manufacturing & predictive maintenance**
- **Biology**
 - Build knowledge graph to model cellular and molecular systems, discover new drugs and treatments, identify side effects, understand pathways



Trusted By Leading Enterprises and Institutions

Stanford | Data Science

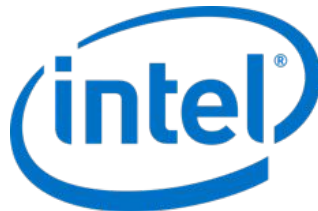


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GRAPHCORE

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Syntensor



Established and Growing Ecosystem

Libraries provide better performance/scale, application-specific models, and new structures to tackle solving problems with graphs



PyTorch

Geometric Temporal



PyTorch Geometric
Signed Directed

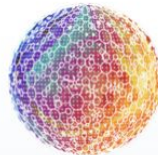


Quiver



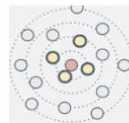
PyG

Graphein



Open Catalyst Project

FACEBOOK AI



DeepGCNs



How Can I Plug into Community Today?

- **Slack Channel** ([Join here](#))
 - Q&A forum for any topic, meet with / learn from / collaborate with other experienced members
 - All announcements for new features, events, round-tables, and community-wide events
 - Start with [#getting-started](#), review docs, intro yourself in [#introductions](#), find topics in the roadmap channels:
 - [#scalability](#) corresponds to our new feature and graph store roadmaps
 - [#explainability](#) corresponds to our explainability roadmap
 - All features and roadmaps correspond to dedicated slack channels - collaboration hubs
 - New features and applications - can start a new channel



Coming Soon: Monthly Town Halls

- **What is it?**

- Monthly showcase - what's new in the roadmap, latest functionality incorporated into PyG, successful case studies using graphs, video tutorials and more
- Opportunity to see a live demo of what PyG Core team is working on
- Spotlight sessions for new contributors
 - Contact us on PyG Slack to present your work (**@lvaylo Bahtchevanov**)
- Examples of things you'll see soon:
 - How a Leading Manufacturing Company Detects Security Threats and Prevents Risk
 - How a BioTech Company Discovered a New Drug By Modeling Protein Activation
 - How to Use Message Passing Effectively
 - How to Build Your Own Feature/Graph Store Implementation

- **First Town Hall: Thursday October 20**



Coming Soon: Weekly Blog

- **What is it?**
 - Weekly Newsletter - blog posts from the core team building PyG exposing you to the latest functionality
 - Tutorials and guides for using new features
 - To subscribe: see **announcements** channel in PyG
 - To contribute: contact PyG team on Slack (**@Ivaylo Bahtchevanov**)
- **Articles coming soon:**
 - How to take advantage of message aggregations
 - How to use explainability in PyG



Coming Soon: Community Sprints

- **What is it?**
 - Engineering-led sprints organized by the PyG team open to everyone
 - Collaborate with the core team and other contributors to build a feature together
 - Community sprints will be announced in the slack channel [#community-sprints](#)
- **How do they work?**
 - Kick-off meeting (feature overview + Q&A)
 - 2 week sprint
 - Delivery meeting - demo, Q&A, overview
 - Kick-off the next one
- **First Community Sprint: Wednesday October 12th**



Showcase Your Results

See how your model compares on a given task with standardized data for a given problem

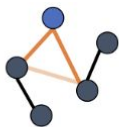
- Compare against industry benchmarks and leaderboard
- Data loader will handle downloading and preprocessing data, with standardized model evaluators, and leaderboards to track state-of-the-art results
- To get started - <https://ogb.stanford.edu/docs/home/>
- See data challenges hosted by the PyG team in the [#challenges](#) channel
- Post results on [#results](#) channel
- **First Data Challenge will be released: October 10th**

Open Graph Benchmark

Benchmark datasets, data loaders and evaluators for graph machine learning



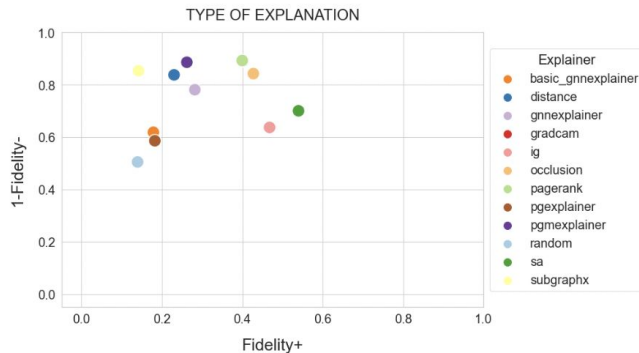
Build New Explainability Methods



GRAPHFRAMEX

A systematic evaluation framework for explainability methods on Graph Neural Networks

- Library to compare top explainability methods
- Comprehensive set of multi-dimensional evaluation metrics ([research paper](#))
- Use the latest [research](#) in explainability out of the box
- Build your own explainability-methods - see [readme](#) to get started, add to leaderboard [here](#)





Public Roadmap

Latest [public roadmap](#) available for tracking major features

See our “**Looking for Community Support**” column for the top features we want your help on!

Contribute by adding requested features to our roadmap under the “**Feature Requests**” Column (reserved for new functionality)

Review and close existing “*Issues*” in Github - we have a lot!

PyG Community Development

View 1 | View 2 | + New view

roadmap 9 X

- Looking for Community Support** (4 items)
 - pytorch_geometric #5520 [Roadmap] GNN Explainability Support 🚀
 - pytorch_geometric #5543 [Roadmap] Deployment Image Container
 - pytorch_geometric #5544 [Roadmap] PyG Integration with Ray Datasets
 - pytorch_geometric #5545 [Roadmap] PyG Integration with HuggingFace Model Store
- Planned** (2 items)
 - pytorch_geometric #4765 [Roadmap] Support multiple node/edge type sampling using NeighborLoader and friends
 - pytorch_geometric #4693 [Roadmap] Benchmark results and Model Zoo
- In Progress** (3 items)
 - pytorch_geometric # [Roadmap] CPU Performance PyG
 - pytorch_geometric # [Roadmap] Remote Backend Integration 🚀
 - pytorch_geometric # [Roadmap] Temporal



Key Roadmap Themes

-
- **Scalability**
 - feature/graph store abstractions, distributed training
- **Performance**
 - CPU and GPU optimized training, inference, and sampling
- **Deployment and Installation**
 - containerized PyG - ready-to-go
- **Models and Algorithms**
 - new approaches and implementations
- **Integrations**
 - supported backends, data types, and formats
- **Explainability**
 - unified API and framework for calling functions, counterfactual explanation, class-wi, causality



Thank you!

**Reach out if you want to
get involved or collaborate!**