

Putting TM Transactions Back Into Database

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What we are good at

- In-memory transactions:
 - Software (STM)
 - Hardware (HTM)

What (looks like) we are very good at

- Very Efficient Concurrent Data Structures:
 - ...
 - PTO [SPAA '15]
 - COP [OPODIS '15]
 - A Speculation-Friendly Binary Search Tree [PPoPP'08]
 - ...

Composability

...and now we have efficient mechanisms for composing multiple data structure operations into a single atomic execution

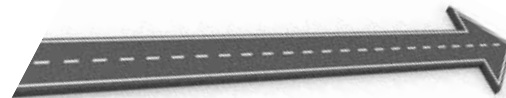
- ParT [PPoPP'15]
- OTB [PPoPP'14]
- Transactional Boosting [PPoPP'08]

```
Shared data: Tree

atomicFoo()
{
    Tree.add(x);
    Tree.add(y);
}
```

Don't replace the DBMS, change it

Composable
Data Structures



DBMS



- Use our efficient data structures to implement fast indexes
- Use composability to execute transactions on them