

C++ as a service — rapid software development and  
dynamic interoperability with Python and beyond

Interactive C++: cling and clang-repl

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# Status. Cling

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- ❖ Continuing to rebase cling on top of llvm13, working on some related to ROOT jit issues

# Status. Clang-Repl

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- ❖ Working on error recovery for template instantiations
  - ❖ Landed in LLVM mainline but reverted due to some asan issues - investigating...
- ❖ Working on adding support for weak symbols: [D126781](#)
- ❖ Working on teaching clang to parse statements on the global scope.
  - ❖ Design is ready, the CodeGen implementation is left

The goal is to provide a more stable error recovery approach than the currently available one in cling

# Status. InterOp

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- ❖ Working towards supporting the initial cppyy ``import cppyy``.
  - ❖ Completed
- ❖ Working on a full surgery of cppyy where we split it into libInterOp

The goal is to rework the python-to-C++ automatic binding generator cppyy to use LLVM interfaces which can help improving speed and accuracy

# Status. Clad

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- ❖ Added LLVM13 and LLVM14 support
- ❖ Working on the tape usage reduction and supporting constructors in forward mode

# People

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**Sara Bellei**

*GSoD22, PhD in Physics,  
Politecnico University of Milan,  
Italy*

Improving the Clang-  
REPL documentation  
(Jun 2022-Dec 2022)



**Rohit Singh Rathaur**

*GSoD22, Birla Institute of Technology,  
Mesra, India*

Improving Interactive Tool  
Analysis Documentation for  
the HSF  
(Jun 2022-Dec 2022)



**Manish Kausik H**

*GSoC22, Computer Science and  
Engineering(Dual Degree), Indian  
Institute of Technology Bhubaneswar*

Add Initial Integration of  
Clad with Enzyme  
(May 2022-Sep 2022)



**Matheus Izvekov**

*GSoC22, Computer Science*  
Preserve type sugar for  
member access on  
template specializations  
(May 2022-Sep 2022)



# People

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**Surya Somayyajula**

*IRIS-HEP Fellow, University of  
Wisconsin-Madison, USA*

Improve Cling's packaging  
system: Cling Packaging  
Tool

(May 2022-Sep 2022)



**Sunho Kim**

*GSoC22, De Anza College,  
Cupertino, USA*

Write JITLink support for  
a new format/architecture  
(ELF / AARCH64)

(May 2022-Sep 2022)



**Jun Zhang**

*GSoC22, Anhui Normal University,  
WuHu, China*

Optimize ROOT use of  
modules for large  
codebases

(May 2022-Sep 2022)



**Anubhab Ghosh**

*GSoC22, Indian Institute of  
Information Technology, Kalyani,  
India*

Shared Memory Based  
JITLink Memory Manager

(May 2022-Sep 2022)

# Upstreaming Patches

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- ❖ Spreadsheet tracking the progress here.
- ❖ Reduced 6 patches.
- ❖ Working on upstreaming 9 more.



# CaaS Open Projects

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- ❖ Open projects are tracked in our [open projects page](#).

# Next Meetings

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- ❖ Monthly Meeting — 7th Jul, 1700 CET / 0800 PDT

If you want to share your knowledge/experience with interactive C++ we can include presentations at an upcoming next meeting

Thank you!