

Introduction

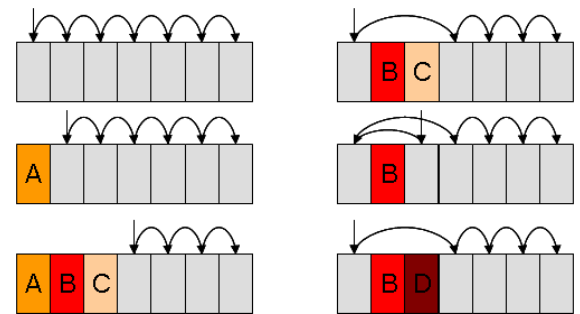
The Vision Foundation Classes (VFC) consists of a highly portable C++ basis framework for embedded programming on various platforms (e.g., Intel, ARM v6/v7/v8 64-bit, EPPC, Tricore, etc.) and compilers (e.g., GCC, ARM Compiler 6, GreenHills, etc.). It is used by Bosch for its driver assistance products (mid-/long-range radars, ultrasound sensors, smart cameras, etc.).

Particularly, among other things, the VFC provides: compiler and platform auto-configuration, basic C++ types, containers, typesafe angles (degrees and radians), typesafe units, integral 2D primitives, mathematical base-functions and constants, error-signaling macros, C++11 alike atomic operations, {2, 3, 4}-tupels, endianness conversions, bit manipulation, type traits, type lists, template metaprogramming, C++11 alike hash implementation, etc.

Example: Fixed mempool datatype

The VFC provides template classes for fast memory management of fixed-sized elements (chunks). Particularly:

- ▶ The number of chunks and chunk-size is a template argument.
- ▶ (de)allocation is implemented with constant time complexity.
- ▶ The list of free chunks is embedded inside the free chunks.



Master Thesis

You will (remotely) work in the *Cross-Domain Computing Solutions* division and *Driver Assistance* department based in Leonberg, in a collaboration with the Faculty of Informatics at TU Dortmund for a master thesis.

The thesis will focus on work related to the VFC, e.g., by implementing novel features, optimizing or improving the existing code-base, improving the automated tests, etc.

Required Skills

- ▶ Proficiency in C++ (templates, inheritance, poliphormism).

Skills Acquired After Master Thesis

- ▶ Perfected C++ knowledge.
- ▶ Worked as part of an agile (scrum) team of experienced embedded software developers/architects.
- ▶ Exposure to the field of embedded software development for automotive and driver assistance systems.

Link To Job Portal

<https://jobs.smartrecruiters.com/BoschGroup/743999767392400-thesis-foundation-classes-development-for-driver-assistance-systems>