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The Bounded Model Checker LLBMC

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```
struct list_node {
    int data;
    struct list_node *tail;
};
typedef struct list_node list;

list *reverse(list *l) {
  list *r = l, *p = NULL;
  while (r != NULL) {
    list *q = r;
    r = r->tail;
    q->tail = p;
    p = q;
  }
  return p;
}
```

Uses

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- Abstract (parametric) testing
- Successfully participate in SV-COMP

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- Support all features of C
- Support most features of C++

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- Method: (software) bounded model checking
  - Consider only bounded number of loop iterations
  - Consider only bounded function call depth
  - Use an efficient SMT-solver

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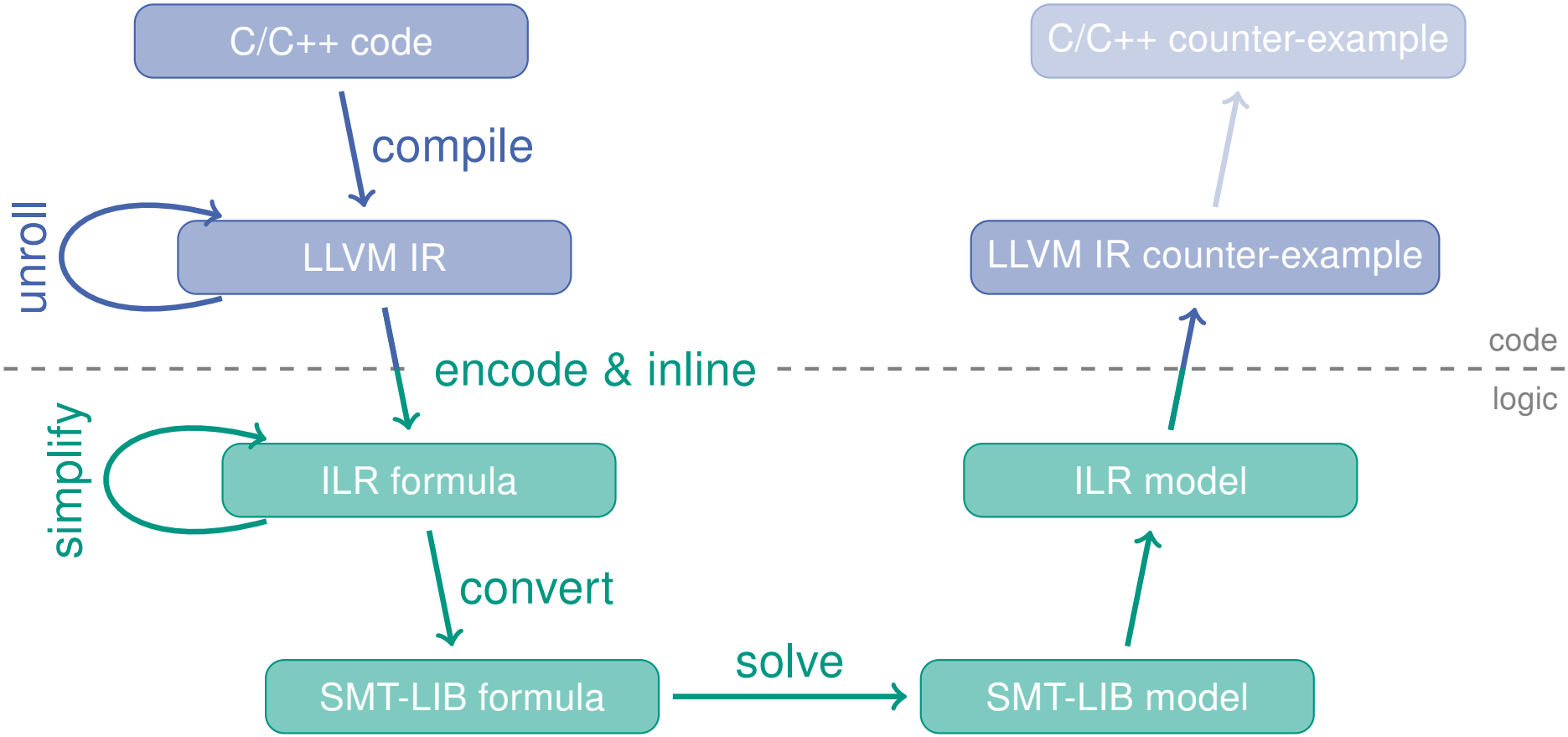
- Target: (embedded) C/C++ code
- Key feature: bit-precision

Built-In Checks

- Integer overflow and underflow
- Division by zero
- Invalid pointer dereference
- Invalid `malloc`
- Invalid `free`
- Stack overflow
- Memory leak
- Invalid bitshift
- User-provided properties (`assume` / `assert`)

LLBMC's Approach



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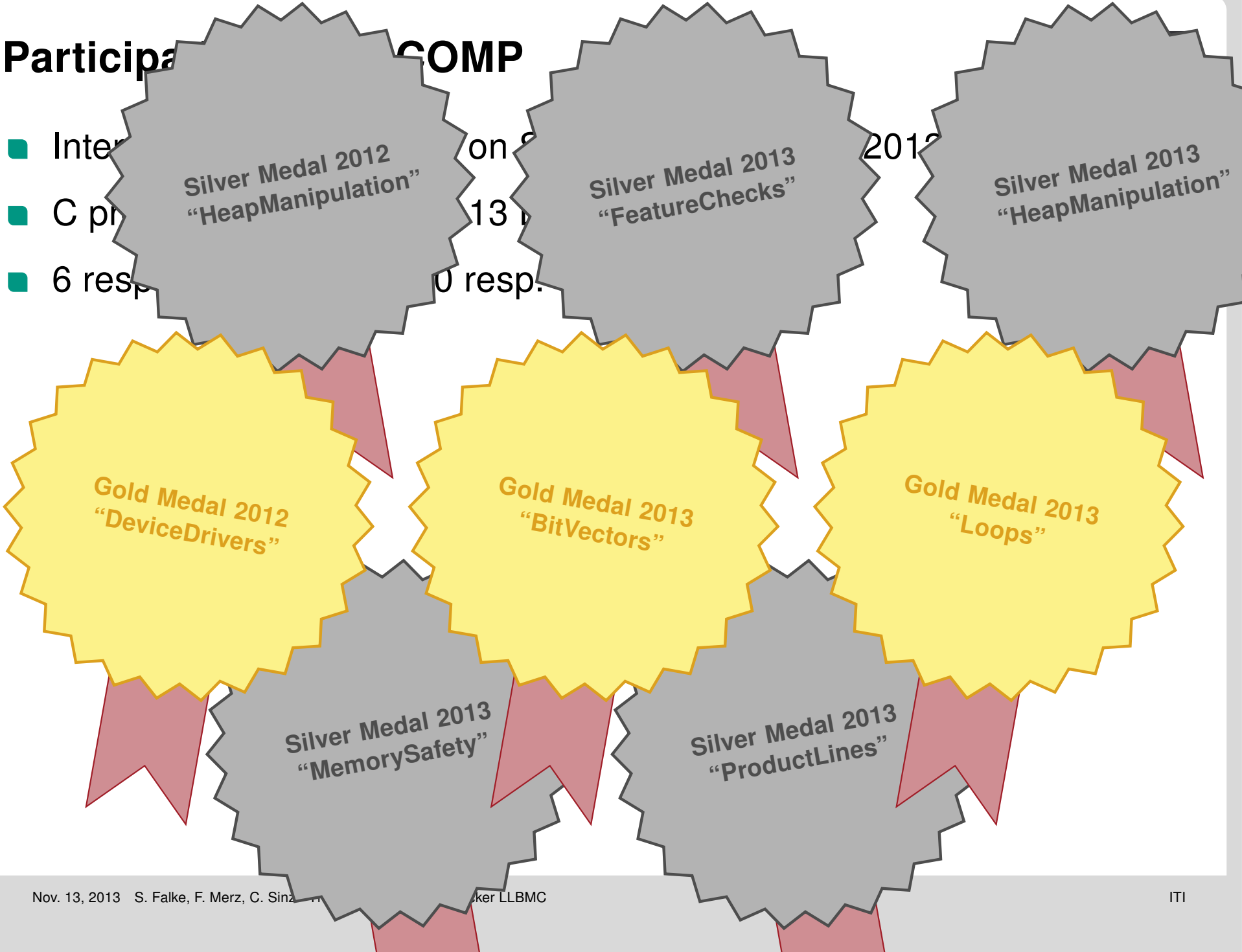

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http://llbmc.org