

# **Un framework multi-linguaggio per l'identificazione delle dipendenze del codice sorgente**

Relatore: Prof.ssa Francesca Arcelli Fontana  
Correlatore: Dr. Darius Sas

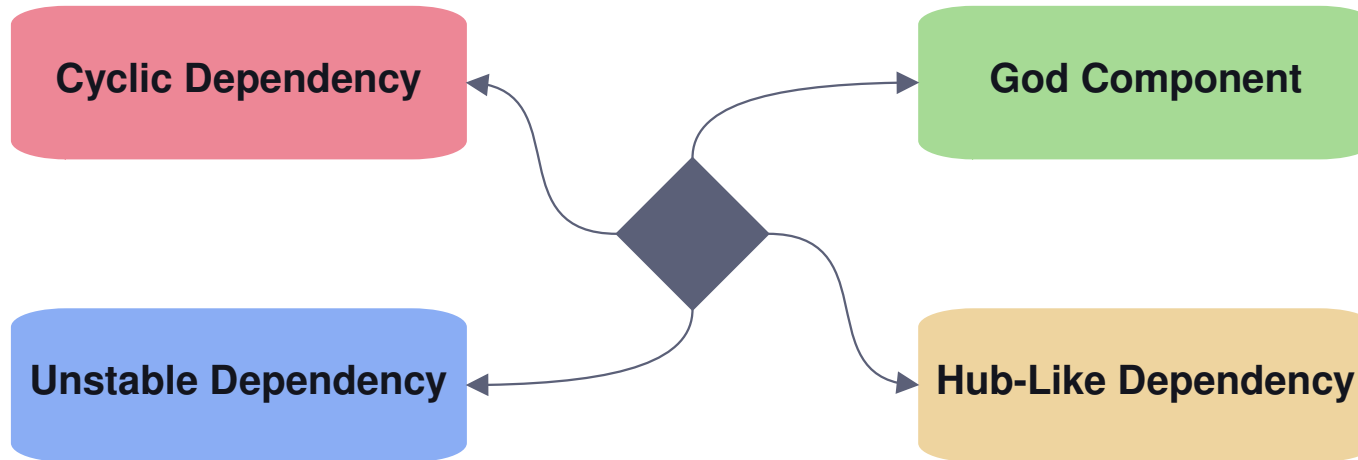
Candidato: Francesco Refolli  
Matricola: 865955

# Arcan

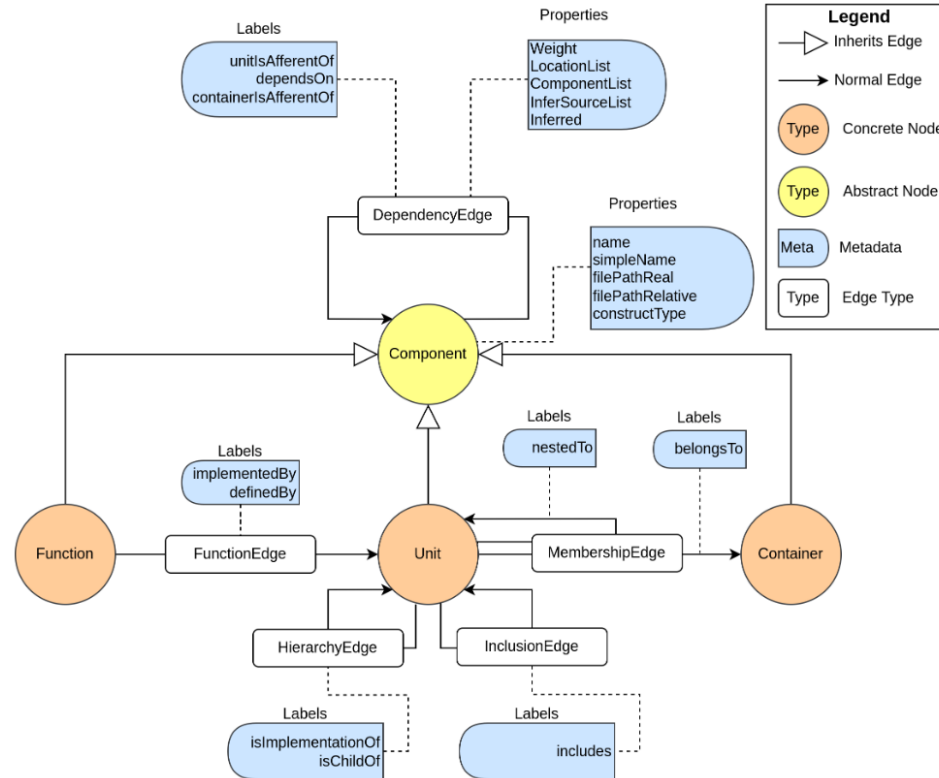
Costruzione del  
Grafo delle Dipendenze

Analisi delle  
Dipendenze

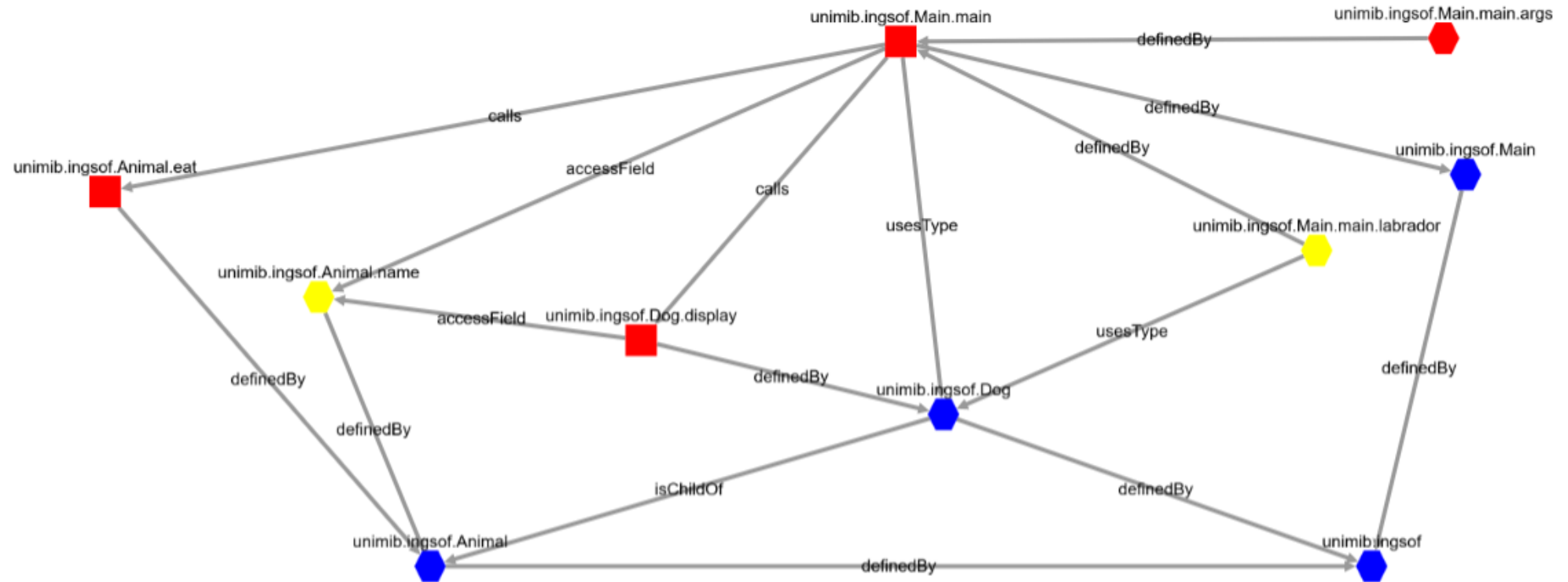
Identificazione degli  
Architectural Smells



# Arcan

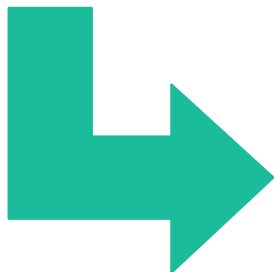


# Dependency Graph



# Tree Sitter

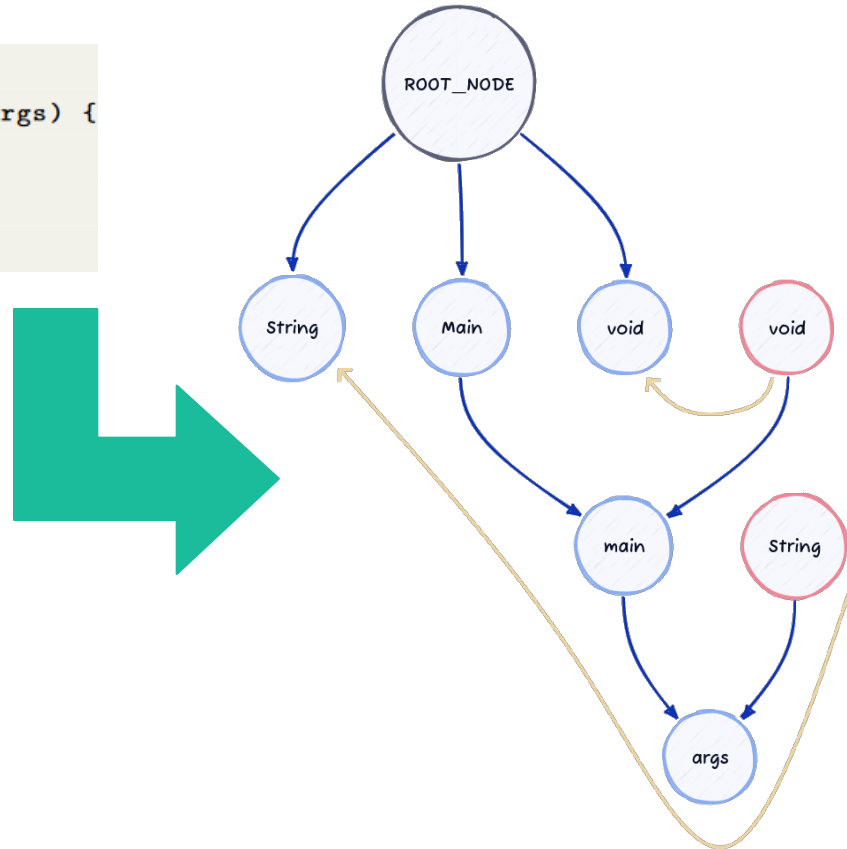
```
class Main {  
  public static void main(String[] args) {  
    // comment  
  }  
}
```



```
(program  
  (class_declaration  
    name: (identifier)  
    body: (class_body  
      (method_declaration  
        (modifiers)  
        type: (void_type)  
        name: (identifier)  
        parameters: (formal_parameters  
          (formal_parameter  
            type: (array_type  
              element: (type_identifier)  
              dimensions: (dimensions))  
              name: (identifier)))  
          body: (block  
            (line_comment))))))
```

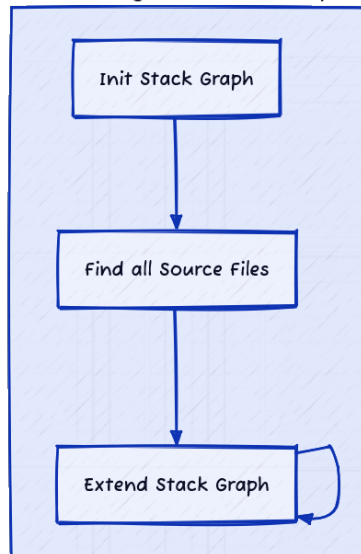
# Stack Graph

```
class Main {  
    public static void main(String[] args) {  
        // comment  
    }  
}
```

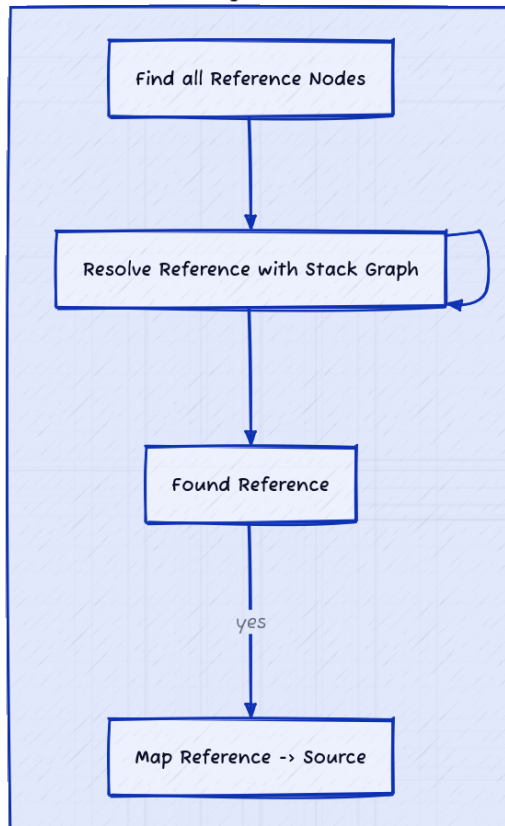


# Costruzione del Dependency Graph

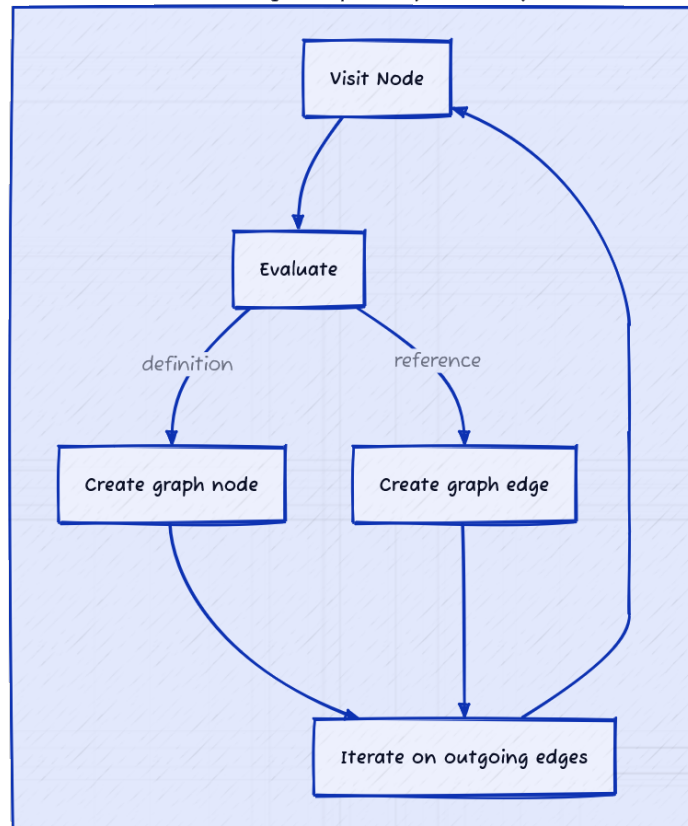
Building Stack Graph



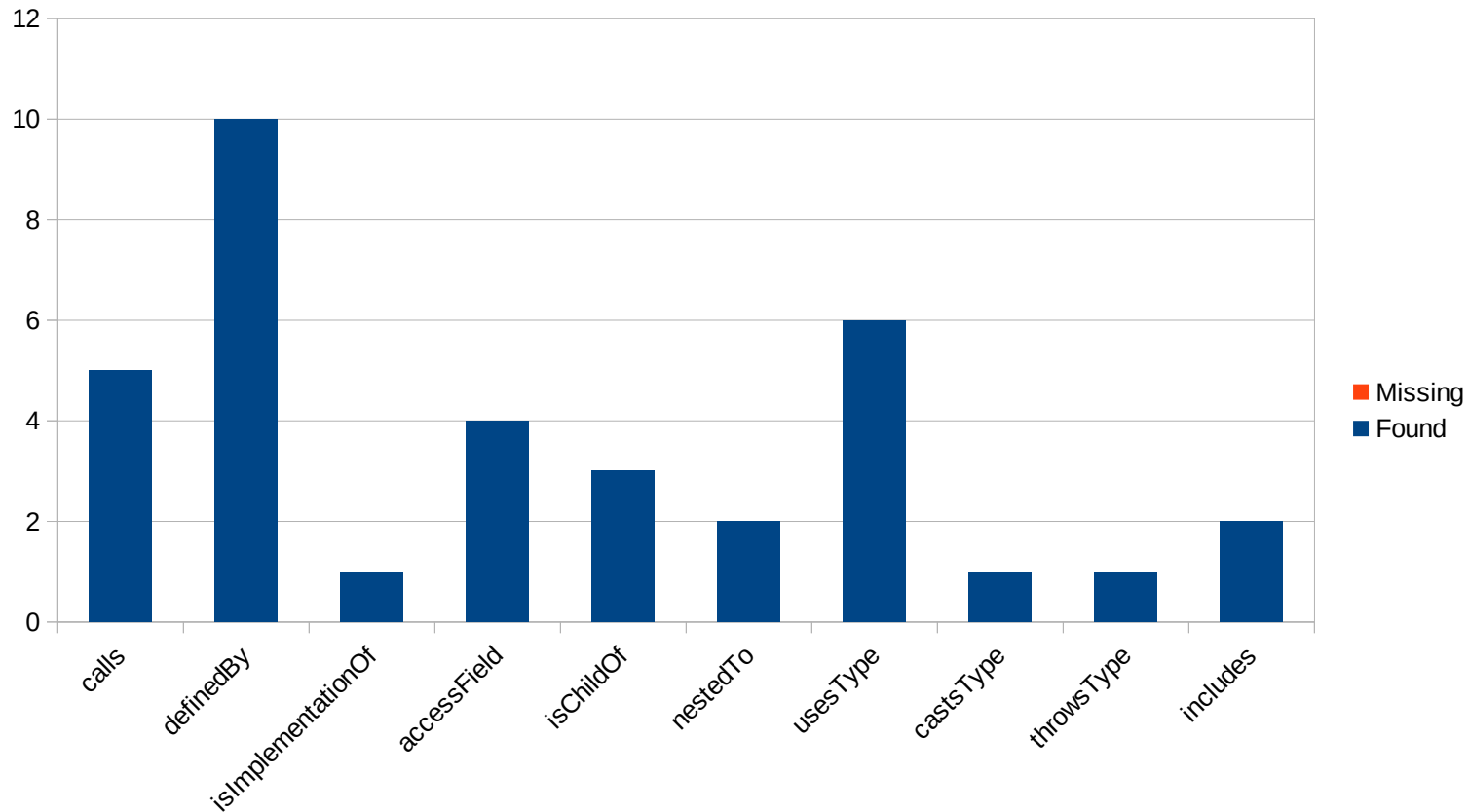
Resolving References



Building DepGraph Graph

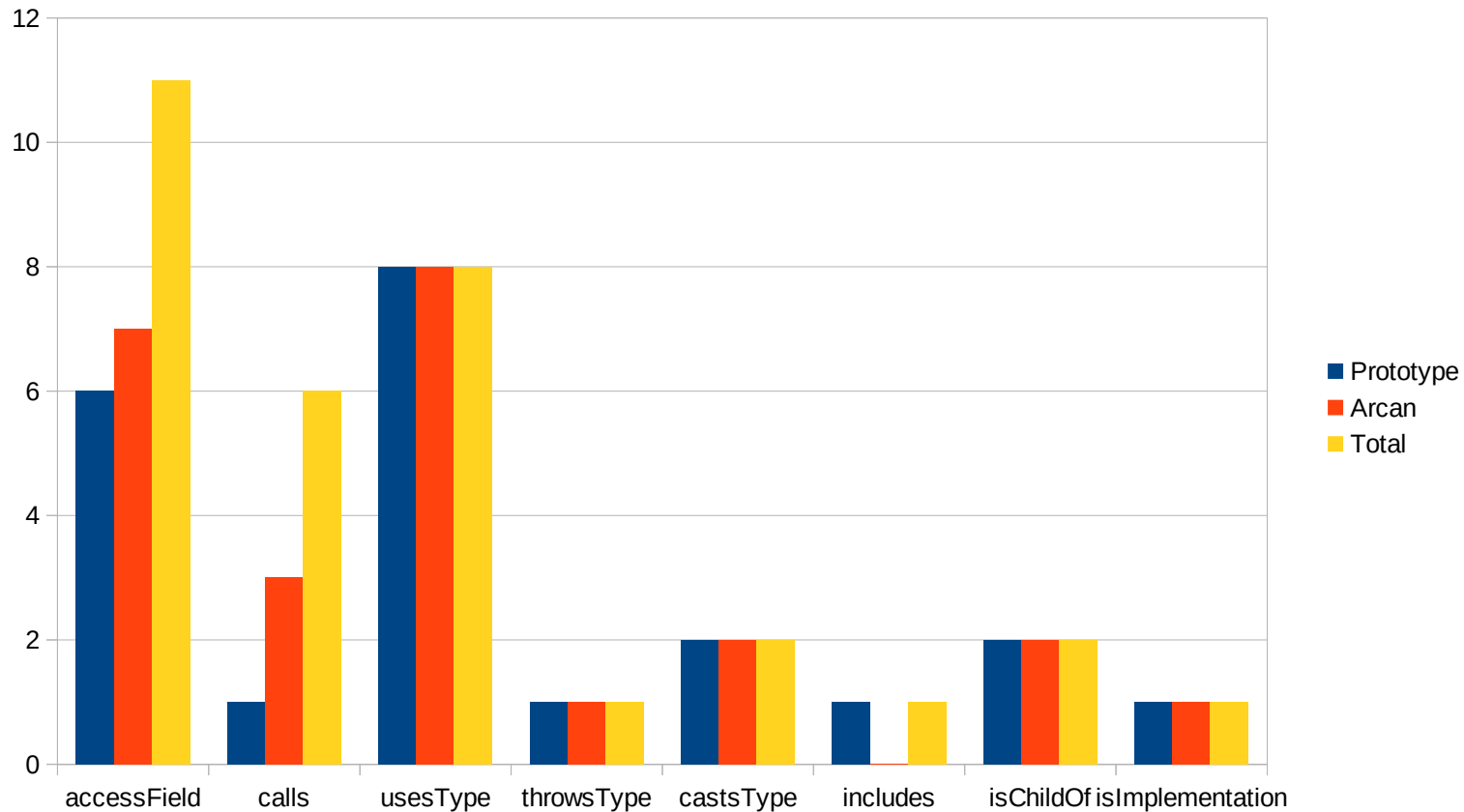


# Validazione - test ad hoc





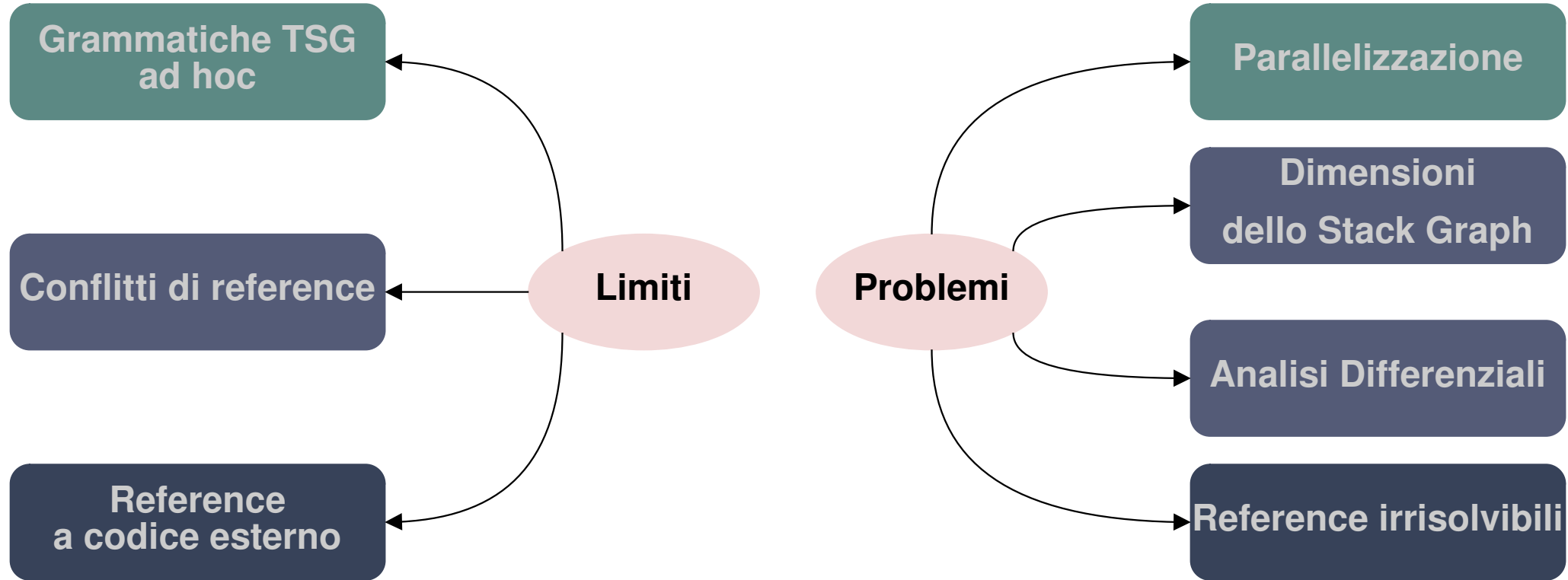
# Validazione - Benchmark



# Comparazione con Arcan

progetto	software	tempo minimo	tempo massimo	tempo medio
guava	Prototipo	N/A	N/A	N/A
guava	Arcan	N/A	N/A	120~
junit4	Prototipo	65,82	69,07	65,88
junit4	Arcan	13,850	17,079	14,611
junit5	Prototipo	132,87	134,75	134,44
junit5	Arcan	42,542	47,613	44,186
antlr4	Prototipo	171,65	175,49	172,64
antlr4	Arcan	19,222	20,140	19,691
fastjson	Prototipo	N/A	N/A	N/A
fastjson	Arcan	66,932	71,094	69,071

# Lezioni Imparate



## Laurea in Informatica

**GRAZIE PER L'ATTENZIONE**

Candidato: Francesco Refolli  
Matricola: 865955

Anno Accademico 2022/2023