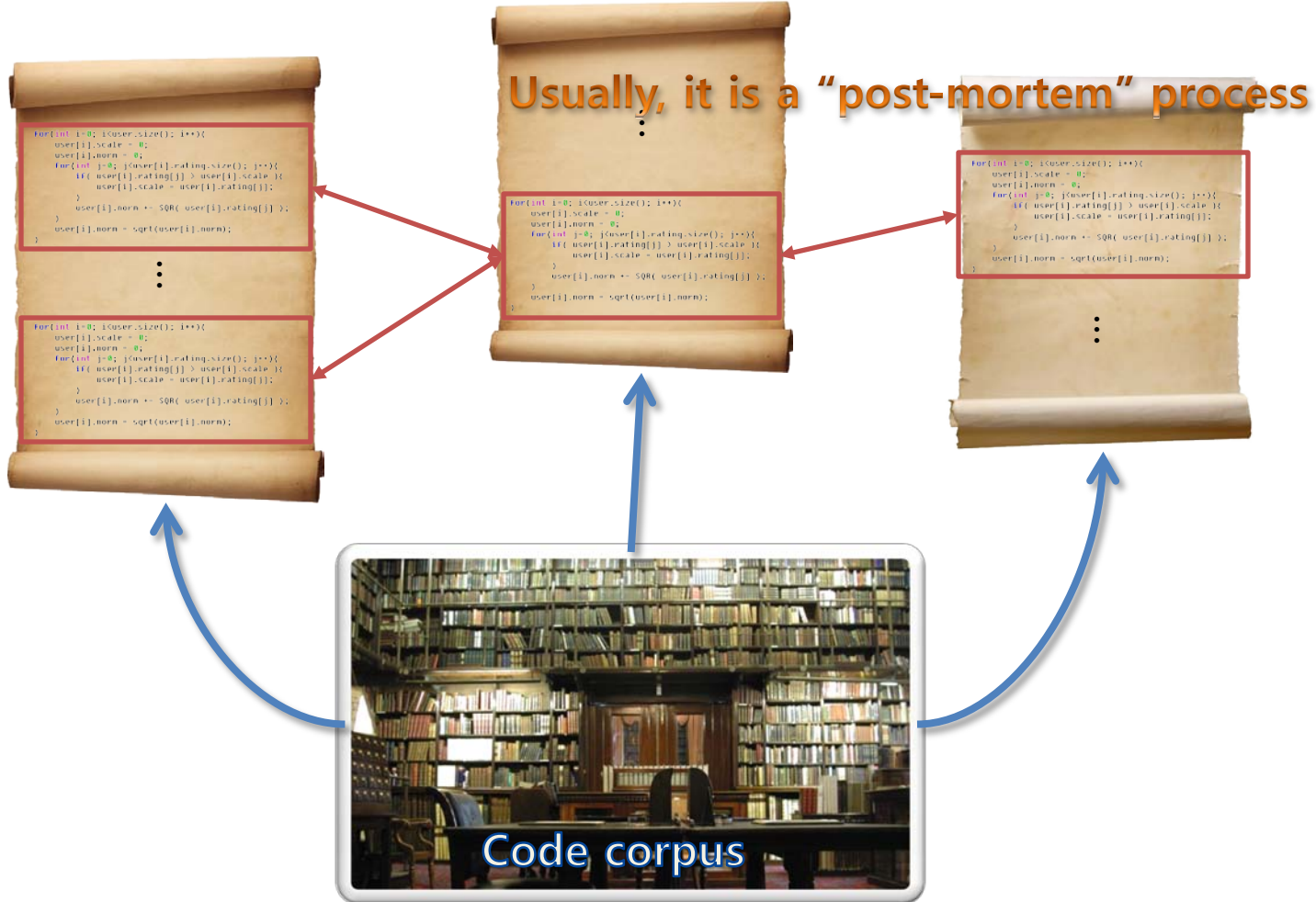


Integrating Code Search into the Development Session

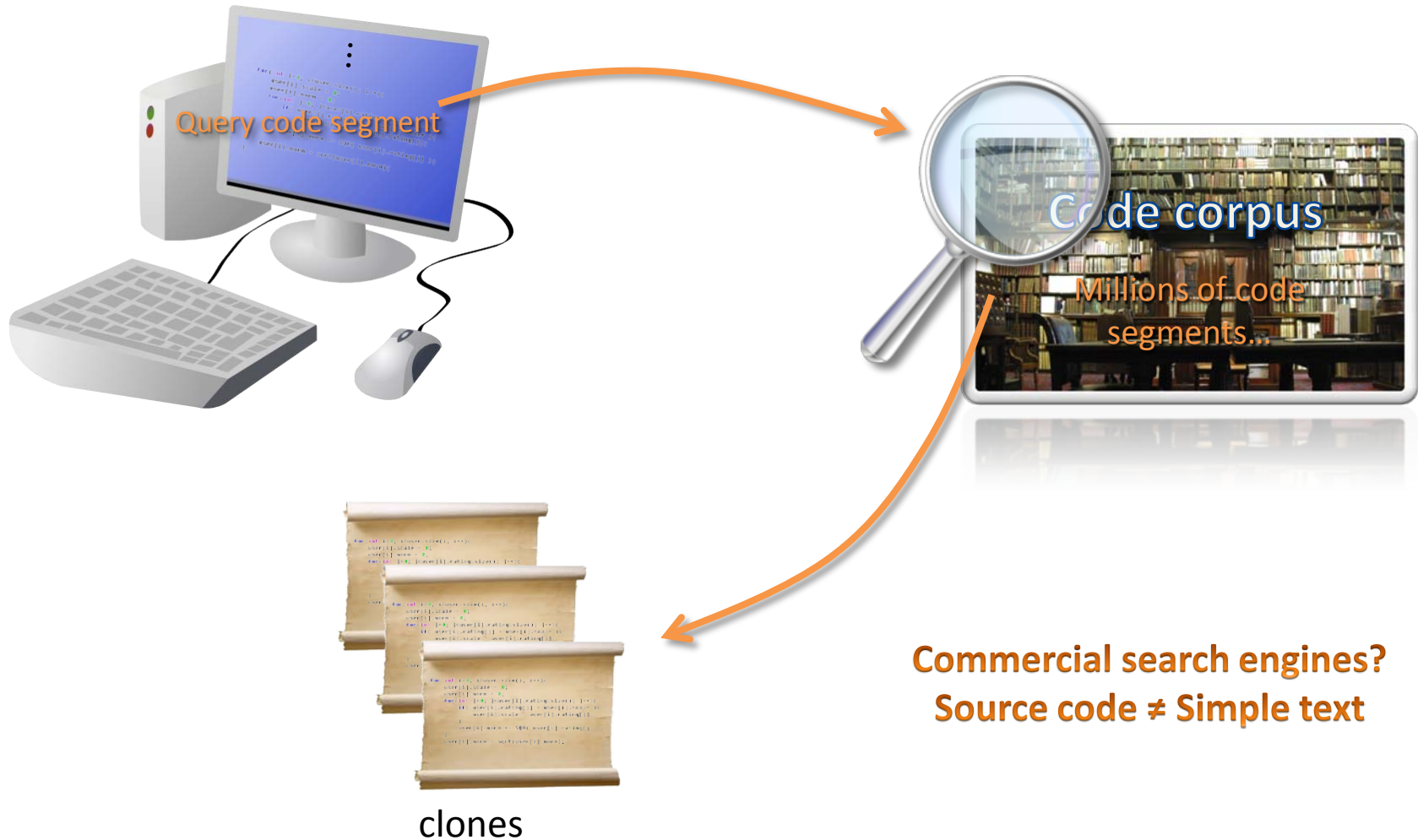
Mu-Woong Lee, Seung-won Hwang, and Sunghun Kim

Code Similarity Search / Clone Detection?



Why Not Online?

❑ Find clones ASAP!



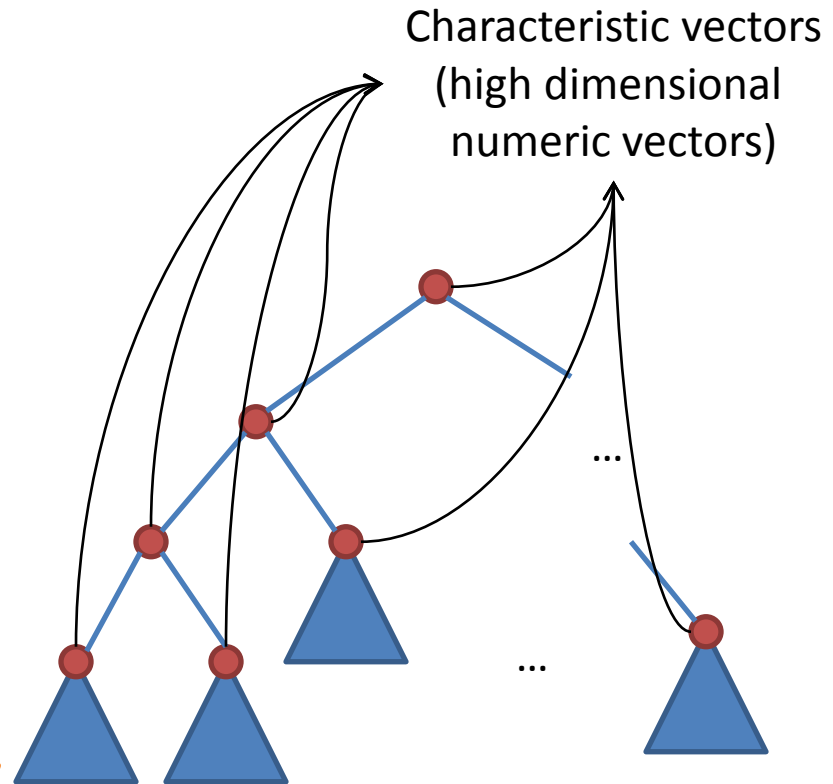
Vector Abstraction of Code

Characteristic Vectors [1]

- Tree similarity → Vector similarity

```

darkkhaki - Xshell 3.0
파일을(F) 편집(E) 보기(V) 도구(T) 창(W) 도움말(H)
12
darkkhaki
1 darkkhaki
48 public final class HomepageRedirector extends Controller {
49
50     /**
51      * logger.
52      */
53     private static final Logger LOGGER = Logger
54         .getLogger(HomepageRedirector.class);
55
56     /**
57      * redirects to the first visible <code>SiteMapNode</code> in th
58      * <code>Locale</code>.
59      *
60      * @param bundle
61      *     the bundle
62      * @param request
63      *     the current request
64      * @return an <code>EmptyResult</code>
65      */
66     @Action(value = "homepage", generate = true)
67     @Permission("user")
68     public Result goToHomepage(final Bundle bundle, final ServiceReq
69         locale locale;
70     if (request.getCommand().getParameter("country") != null) {
71         locale = findLocale(request.getCommand().getParameter("c
72             .getFirstValue().split(" ").
73         redirect(bundle, request, locale);
74         return new EmptyResult();
75     }
76
77     locale = request.getLocale();
78     if (locale != null) {
79         redirect(bundle, request, locale);
80     }
81     return new EmptyResult();
82 }
83
84 /**
  
```



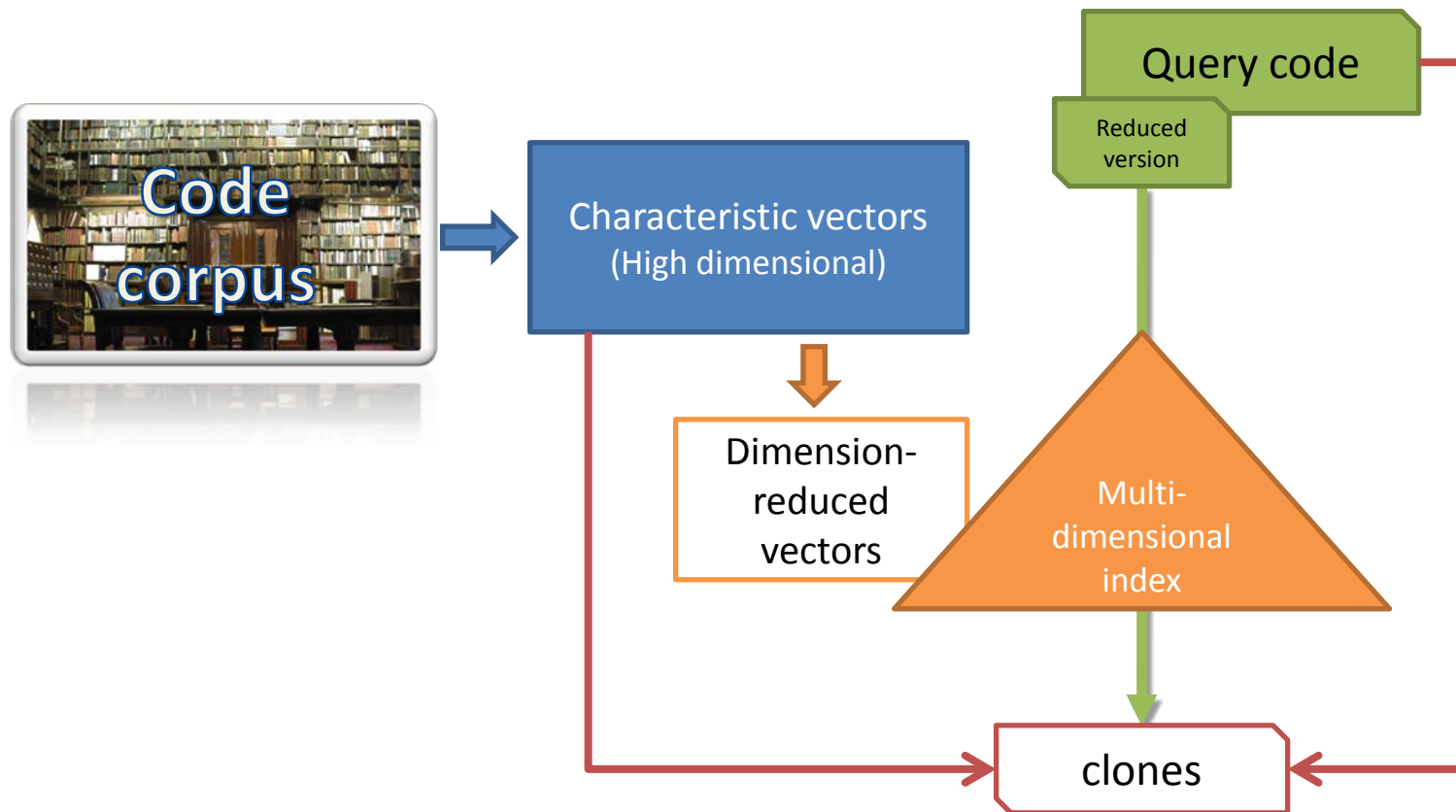
Each sub-tree
containing at least T
nodes

AST

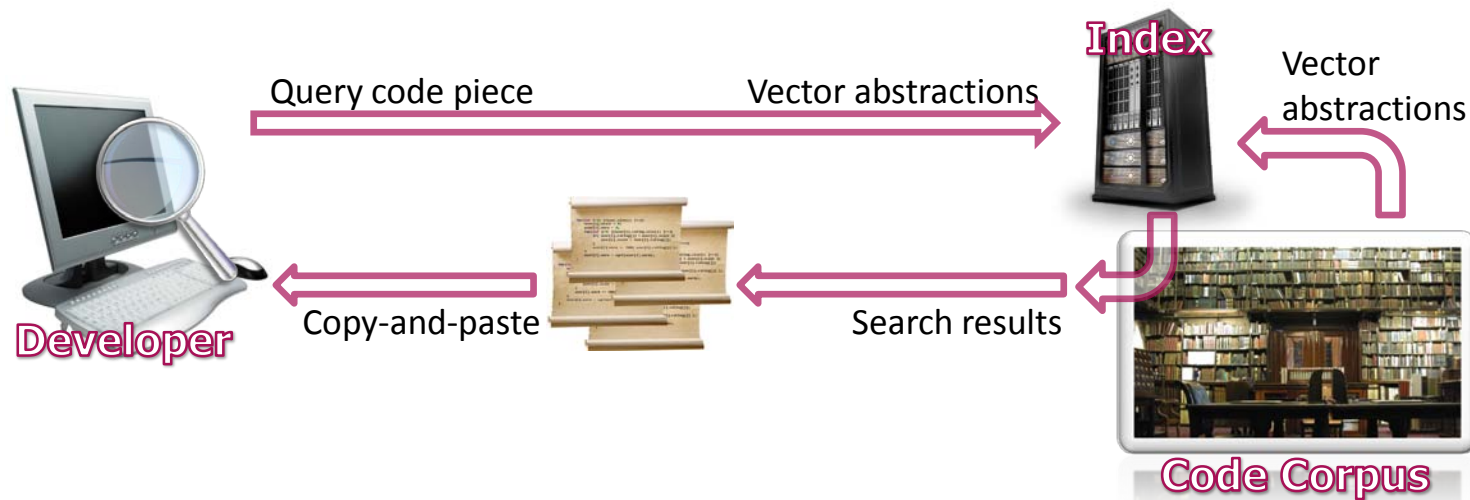
[1] L. Jiang, G. Misherghi, Z. Su, and S. Glondou, "DECKARD: Scalable and Accurate Tree-based Detection of Code Clones," ICDE 2007.

□ Based on the GEMINI framework

- “Filtering-then-Ranking” approach



[2] M.-W. Lee, J.-W. Roh, S.-w. Hwang, and S. Kim, “Instant Code Clone Search,” ACM SIGSOFT/FSE 2010.



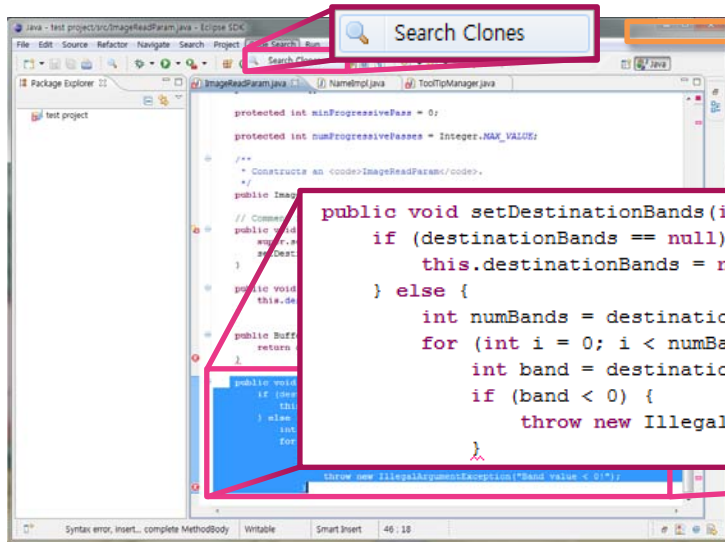
□ Integrating Code Search into the Development Session [3]

- Given an internet scale software corpus, by posing every code segment as a query to this corpus at the time of generation, developers can instantly reference the relevant code segment to enhance productivity

[3] M.-W. Lee, S.-w. Hwang, and S. Kim, "Integrating Code Search into the Development Session," ICDE 2011.

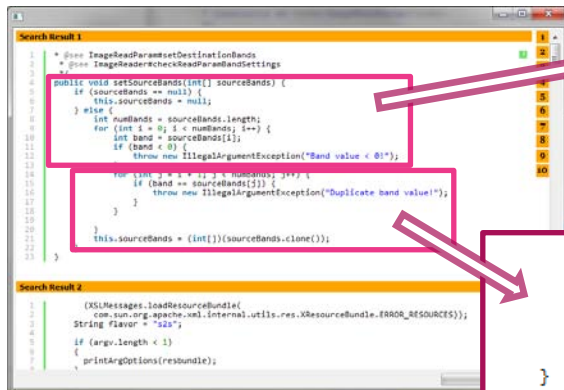
Development Session

Information & Database Systems Lab



```
public void setDestinationBands(int[] destinationBands) {  
    if (destinationBands == null) {  
        this.destinationBands = null;  
    } else {  
        int numBands = destinationBands.length;  
        for (int i = 0; i < numBands; i++) {  
            int band = destinationBands[i];  
            if (band < 0) {  
                throw new IllegalArgumentException("Band value < 0!");  
            }  
        }  
    }  
}
```

Search Result



```
public void setSourceBands(int[] sourceBands) {  
    if (sourceBands == null) {  
        this.sourceBands = null;  
    } else {  
        int numBands = sourceBands.length;  
        for (int i = 0; i < numBands; i++) {  
            int band = sourceBands[i];  
            if (band < 0) {  
                throw new IllegalArgumentException("Band value < 0!");  
            }  
        }  
    }  
}
```

```
for (int j = i + 1; j < numBands; j++) {  
    if (band == sourceBands[j]) {  
        throw new IllegalArgumentException("Duplicate band value!");  
    }  
}  
this.sourceBands = (int[])sourceBands.clone();  
}
```

Copy & Paste

Thank You!