Descriptive to Prescriptive Analytics and Beyond for Developer Productivity

DPE Summit 2022

Linked in

Developer Productivity and Happiness

"The purpose of computing is insights not numbers."

Hamming, 1962

Grant Jenks
Senior Staff SWE

Shailesh Jannu
Senior Staff AI/ML

LinkedIn Engineering

Scale of developer productivity at LinkedIn (approximate numbers).

Thousands Engineers

10K+ Repositories

10M+ Builds

10M+ CI Jobs

100M+ SLOC

100K+ Merges

100M+ Artifacts

1M+ Deployments

How we SEE Developer Productivity

SPACE, DORA, QUANTS, etc.

Happy
How satisfied?
Qualitative

Effective
Success rate?
Quantitative

Efficient
How long?
Quantitative

Gradle Build Download Speed (Higher is Better)

CSAT ANALYSIS

| Response count >= 5 | FY23 Q1 ⌄ | Organization: ⌄ | Persona ⌄ |

Top Highlights ⓘ

›		4.60	▲ +29.9% (+1.06)
›		4.52 ✓	▲ +0.4% (+0.02)
›		4.39	▲ +8.4% (+0.34)
›		4.38	▲ +5.8% (+0.24)
›		4.32	▲ +20.3% (+0.73)

Top Painpoints ⓘ

›		2.50	▼ -40.6% (-1.71) ✓
›		2.57	▲ +7.1% (+0.17)
›		2.60	▲ +7.0% (+0.17)
›		2.64	▼ -9.0% (-0.26)
›		2.67	▼ -19.1% (-0.63)

Top Movers ⓘ

›		2.50	▼ -40.6% (-1.71) ✓
›		4.60	▲ +29.9% (+1.06)
›		4.32	▲ +20.3% (+0.73)
›		2.67	▼ -19.1% (-0.63)
›		2.83	▲ +18.9% (+0.45)

Select Tooling Interfaces   ···

Feedback

| Tooling Interface | Overall | AI | Android | Backend | Data Infra | Data Science | EPE Developer |

What were you doing?

Process mining the developer journey.

▓▓▓'s Team's Experience ⓘ

3.1
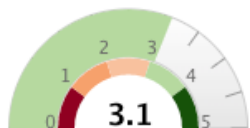
Overall Experience Index ⓘ

Change user

▓▓▓'s Org ⓘ

Manager

▓▓ ████ 3.2

Peers

▓▓▓ ██████ 3.8

▓▓▓ █████ 3.5

▓▓▓ █████ 3.5
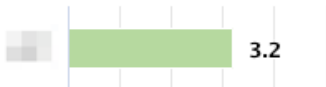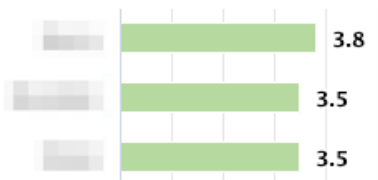
💡 Top Insights for ▓▓▓ ⓘ

Productivity Initiatives

◎ ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓ 👍 👎

▓▓▓'s Team's Developer Experience Metrics ⓘ

Filter by:

(Metric: 3 ▾) | (Persona ▾) (Region ▾) (Repository ▾)

⌄ LinkedIn Metrics ⓘ

Developer Build Time P90 ⓘ
▓▓▓▓▓ ↑23.7%ⓘ 1.7
Over last 6 weeks · vs. prior 6 weeks

Developer Build Time P50 ⓘ
▓▓▓▓▓ ↑22.3%ⓘ 2.5
Over last 6 weeks · vs. prior 6 weeks

Build CSAT ⓘ
▓▓▓ N/Aⓘ 3.2
Over last 6 weeks · vs. prior 6 weeks

Feedback

Types of Analytics

If analytics types are a progression, what comes next?
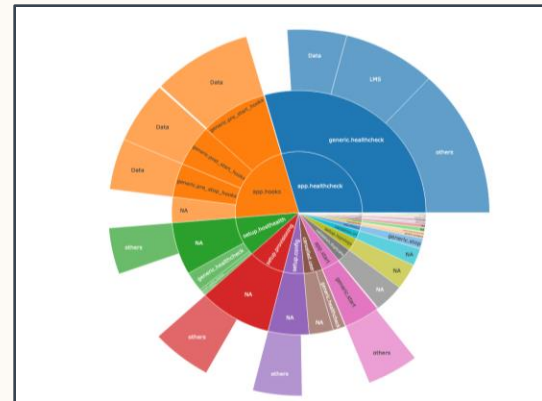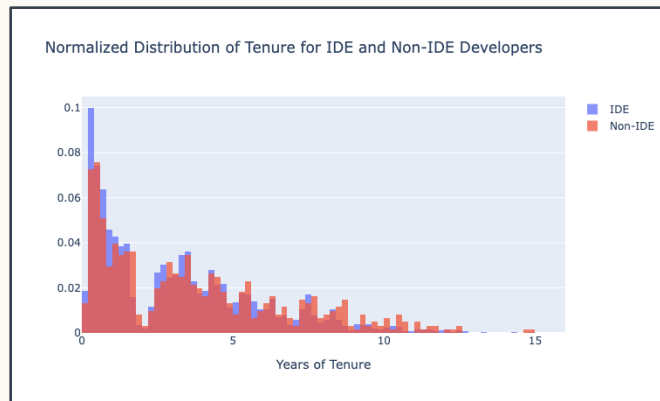
Descriptive   Diagnostic   Predictive   Prescriptive
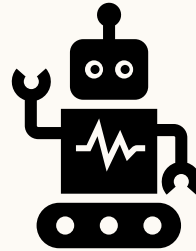
Augmented Analytics

The use of AI / ML to assist insights through custom models.

Normalized Distribution of Tenure for IDE and Non-IDE Developers

//coda

Just keep cod**in**
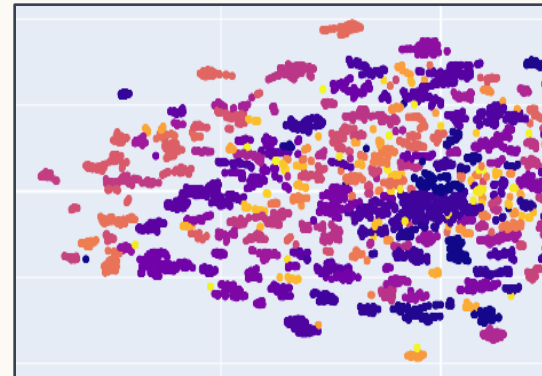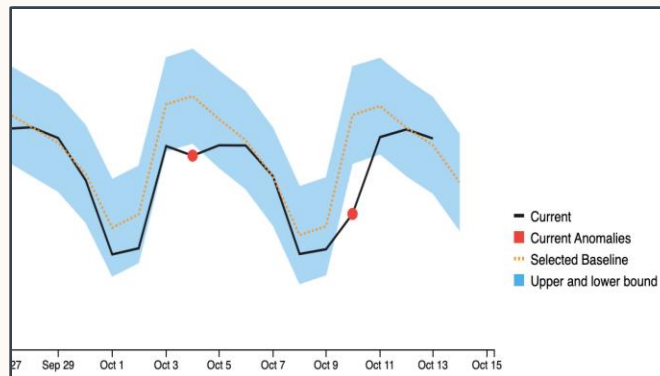
| Python ▾ | Examples ▾ | how to send a bunch of messages to kafka | 🔍 |

30 results (0.6920ms)   Top K: 30

Multiproduct: ▨▨▨▨   File: ▨▨▨▨▨▨▨▨▨▨▨▨▨▨   👍 👎

""" Send messages to kafka :param topic: a dict from self.topics :return: bool """

```python
 1 def kafka_batch_produce(self, topic: dict) -> bool:
 2     """
 3     Send messages to kafka
 4     :param topic: a dict from self.topics
 5     :return: bool
 6     """
 7     if not len(topic['messages']):
 8         return False  # skip kafka produce on 0 messages
 9     messages_counter = 0
10     if self.kafka_client is None:
11         try:
12             self.kafka_init()
13         except IOError as e:
14             raise IOError(e)
```

```
$ coda -s "How to add memory to host?"

    rain-admin quota adjust --product <STRING> -f <STRING> --add-cores <INT> --add-memory <INT>
    rain-admin quota adjust --product ░░░░░░░░░░░░ -f ░░░░░░ --add-cores 120 --add-memory 410

    rain-admin quota adjust --fabric <STRING> --product <STRING> --add-memory <INT>
    rain-admin quota adjust --fabric ░░░░░░ --product ░░░░░░░░░░ --add-memory 160

    Help:
        quota: Manage resource quotas for a given allocation pool or...
        adjust: Adjust resource quota by a percent of actual allocated (not
        -f: The name of the Fabric  [required]
        --product: The name of the product associated with this resource quota.
        --add-cores: 32 --add-memory 64
        --add-memory: add in GBs of memory to the current quota limit
        --fabric: The name of the Fabric  [required]


Control+V to use the first command!
```

I can't import the latest version of numpy

Submit

All　　📖 Questions and Answers　　◈ Support Requests

📖 Questions and Answers

View more results →

accepted answer

ImportError: numpy.core.multiarray failed to import - in prod

Python MP works fine in dev and after deploying in PROD getting ImportError:

1 vote ● Asked on Jan 29 2019, 12:01:13 am PST by

accepted answer

Install Python numpy library

I want to use the Python numpy library for a task. How can I install it on my MBP?

1 vote ● Asked on Mar 15 2020, 10:13:28 am PDT by

◈ Support Requests

View more results →

TOOLS-191329 – import error and cannot be fixed by current solutions

Status CLOSED ● Created on Jul 31 2018, 4:21:33 pm PDT by

TOOLS-250229 – Can't ELR numpy Version 1.18.2

Status CLOSED ● Created on Apr 03 2020, 11:15:24 pm PDT by

Need immediate help resolving an issue?

If you are experiencing aberrant behavior with a LinkedIn specific tool or integration, oncall engineers are available to help!

Request oncall assistance

Code Similarity Model

AI Model to detect similar code.

```
// Given:                    // Find:

def sum(a, b):               def add(a, b):
    return a + b                 return a + b


                             def multiply(a, b):
                                 return a * b
```
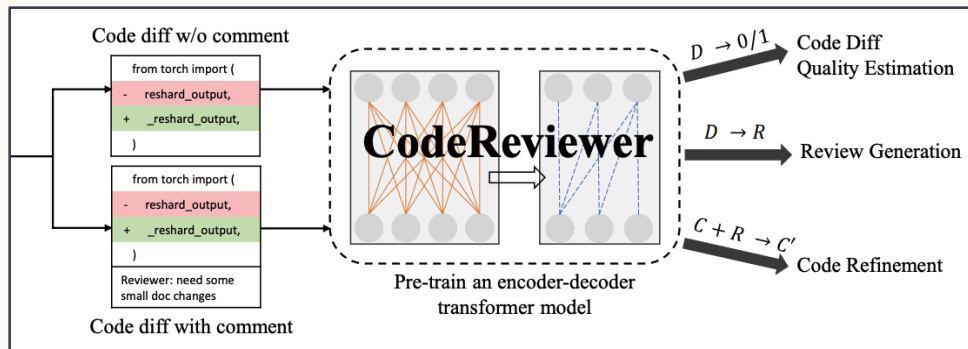

Contrastive learning on obfuscated code pairs to detect similar code snippets.

```java
@Override
public void apply(@Nonnull Project project) {
    project.getPlugins().apply(BasePlugin.class);
    project.getPlugins().apply( s: "li-base");
    project.getPlugins().apply(Container38MitigationPlugin.class);

    configureConfigurations(project);
    configureTasks(project);
}
```

Show Internal Usages

Go to Source Code

@Override   Reader Mode
```java
public void apply(Project project) {
    super.apply(project);
}
```
                                                   src/main/java
/com/linkedin/ligradle/mdc/MDCAndroidPlugin.java

Go to Source Code

Go to Source Code

```
70  +        public LiveData<Resource<PagedList<ViewData>>> fetchSubscriberHub(@Nullable String
53  71             subscriberHubLiveData.loadWithArgument(seriesUrn);
54  72             return subscriberHubLiveData;
55  73         }
```

Comment on lines 70 to 73

Hi 👋 I'm Casper 👻, an AI that reviews code based on past comments.

Here's a comment that looks relevant to the current change:

This can be replaced with `return subscriberHubLiveData.loadWithArgument(seriesUrn);`

Casper does not reply to comments but you can use the 👍/👎 reactions for feedback. Reach out to #ask_developer_insights for questions.

Reply...

Describe
Diagnose
Predict
Prescribe
Augment!