

HACK MACHINE LEARNING

Hacking Your Facebook Data



6:30 PM
1010 DOW

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What is Machine Learning?

Machine Learning vs. Data Mining

- Machine learning focuses on prediction, based on *known* properties learned from the training data.
- [Data mining](#) (which is the analysis step of [Knowledge Discovery](#) in Databases) focuses on the [discovery](#) of (previously) *unknown* properties on the data.

“Machine learning” Wikipedia, accessed April 1, 2013

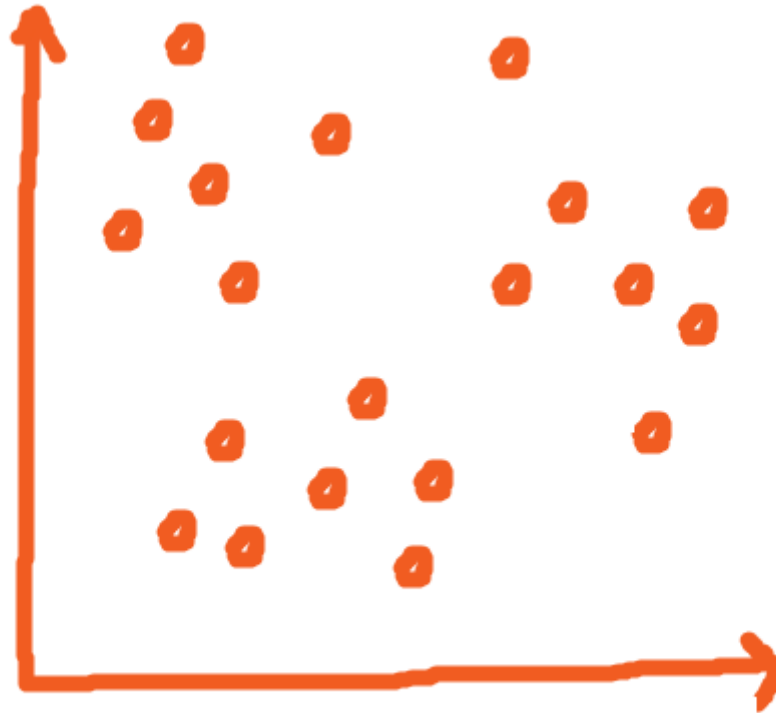
Machine Learning vs. Big Data

- Information architecture, parallel computing, different kind of clustering
- **Myth:** “It’s not the size of the data, but the way you use it.”

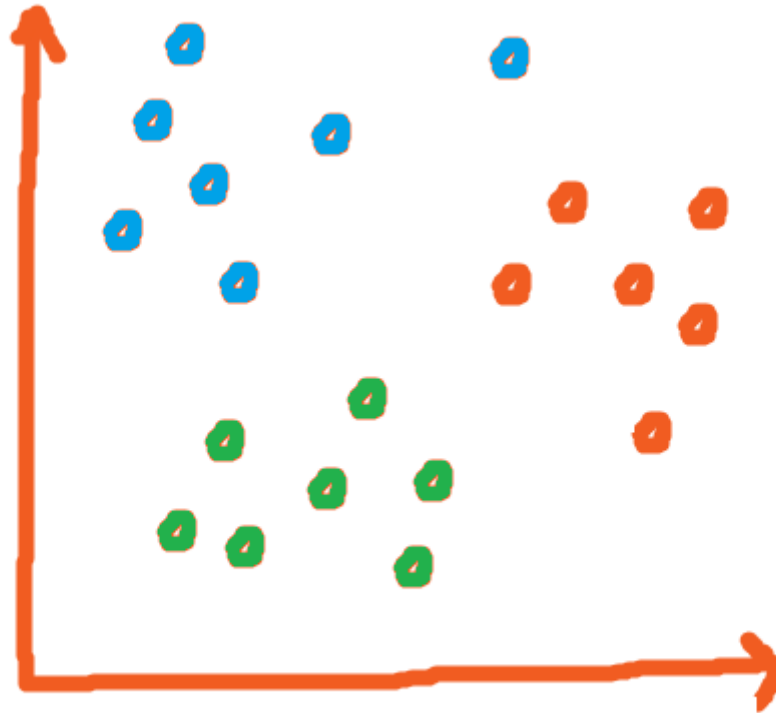
Defining the Problem

- **Feature set:** known characteristics/facts about event/item, independent variables
- **Label:** description of event/item, dependent variable
- **Supervised Learning:** training set with labeled data
- **Semi-supervised Learning:** small amount of labeled data, mixture of supervised and unsupervised
- **Unsupervised Learning:** no labeled data, e.g. clustering

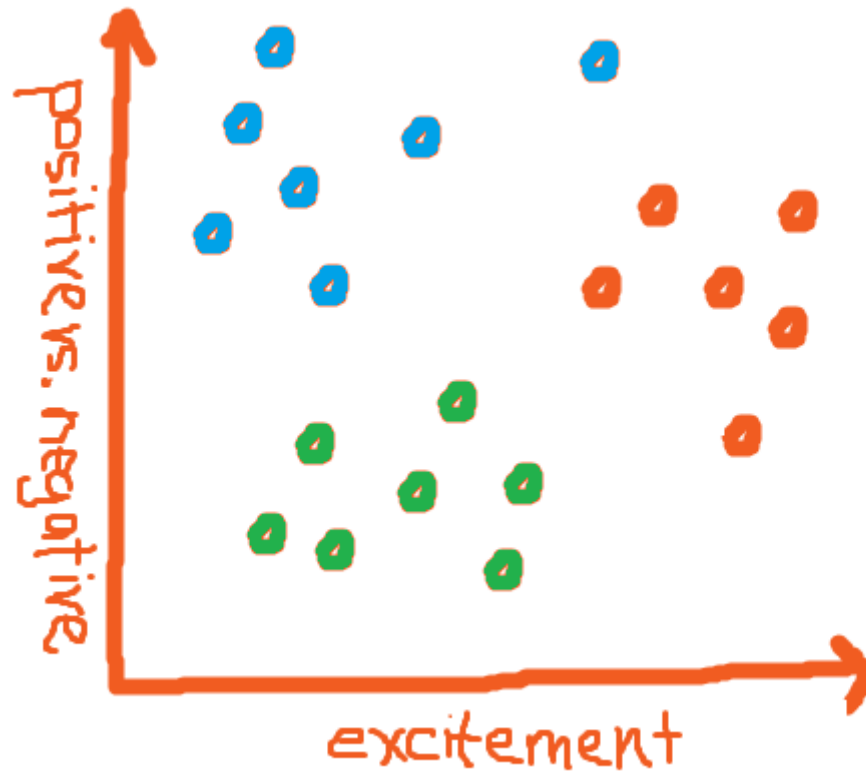
Clustering Method



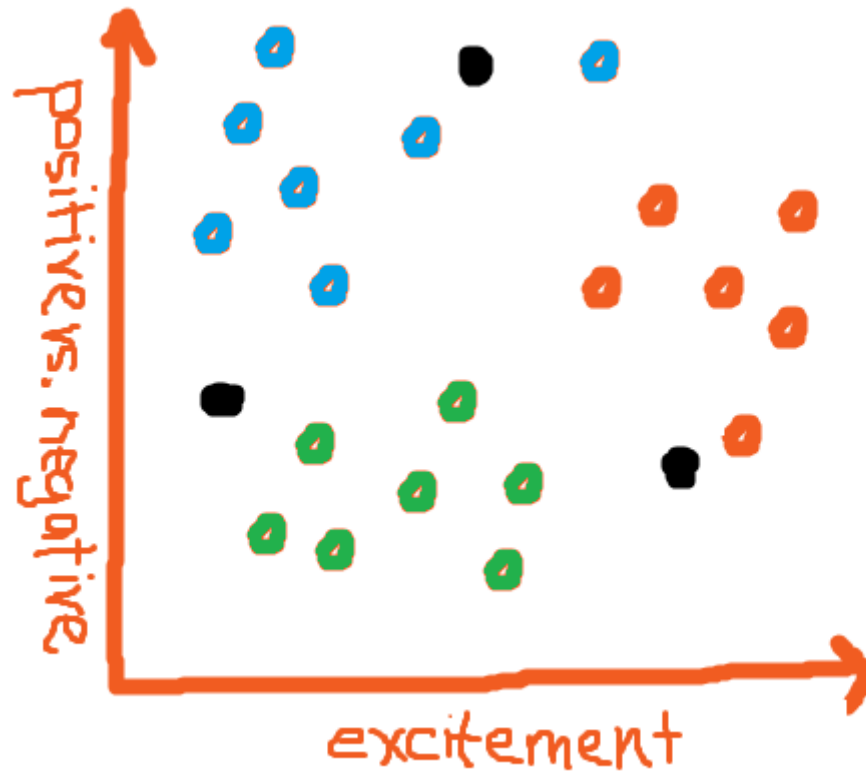
Clustering Method



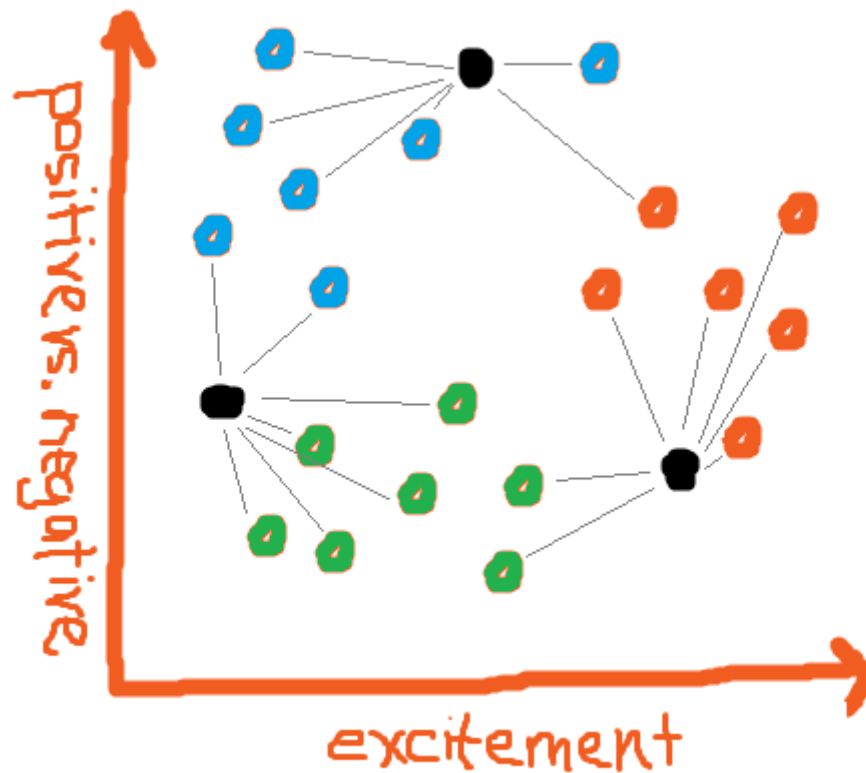
Clustering Method



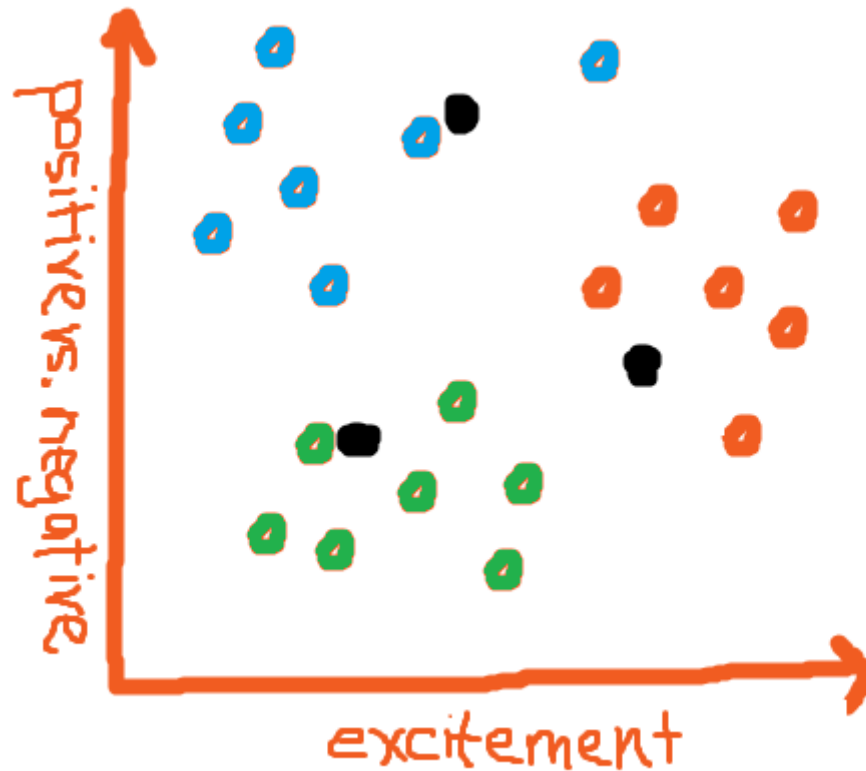
Clustering Method



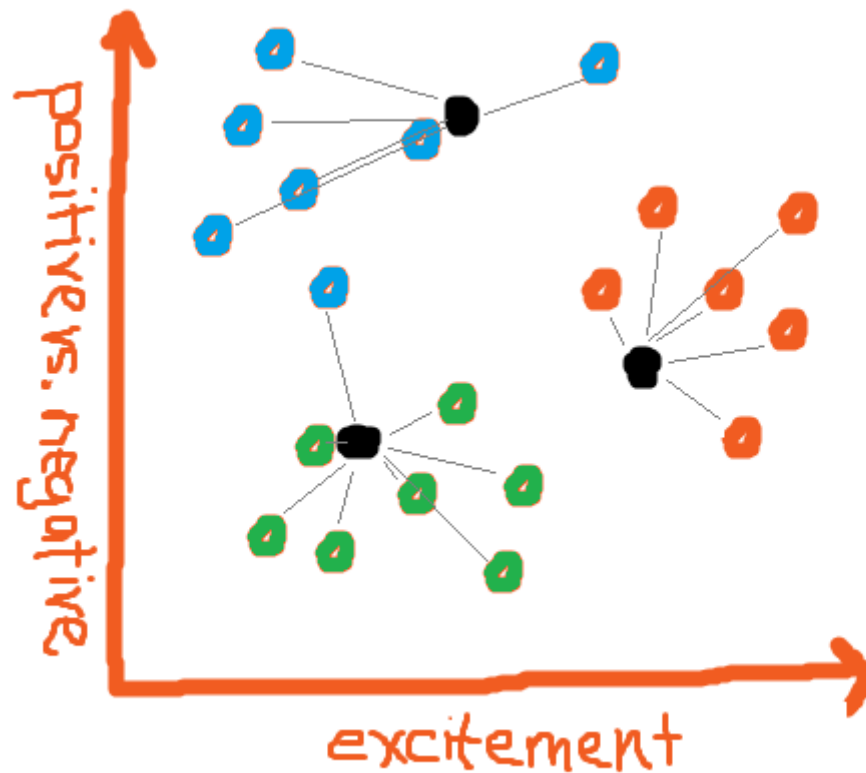
Clustering Method



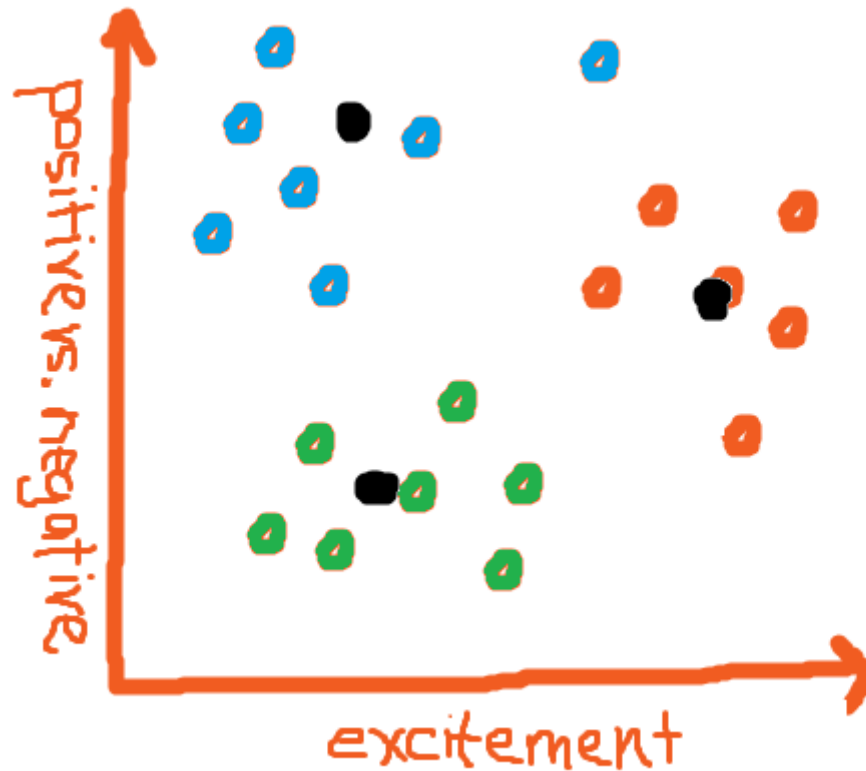
Clustering Method



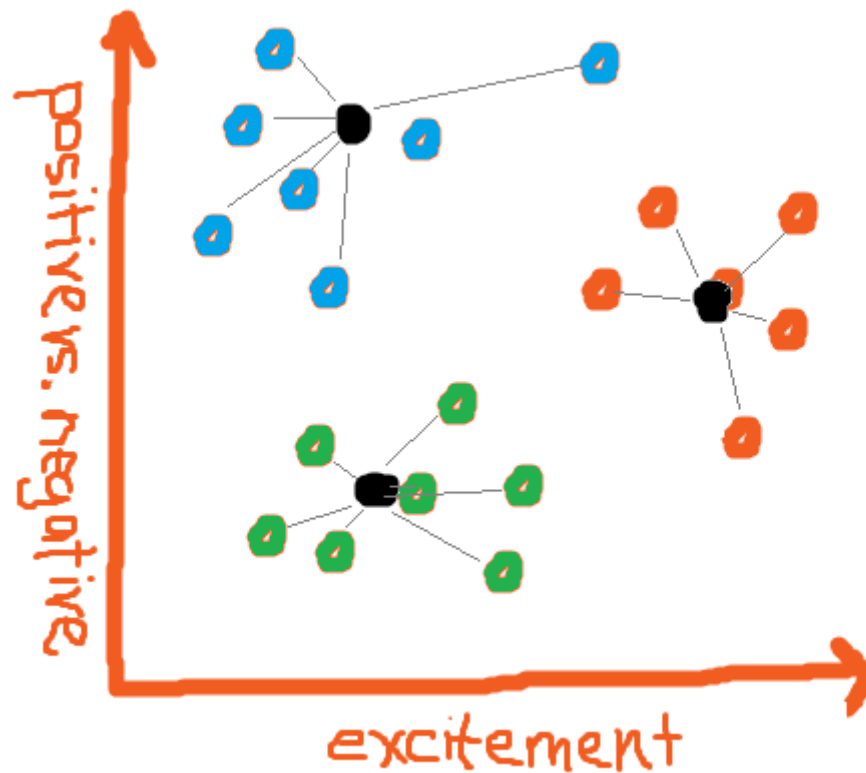
Clustering Method



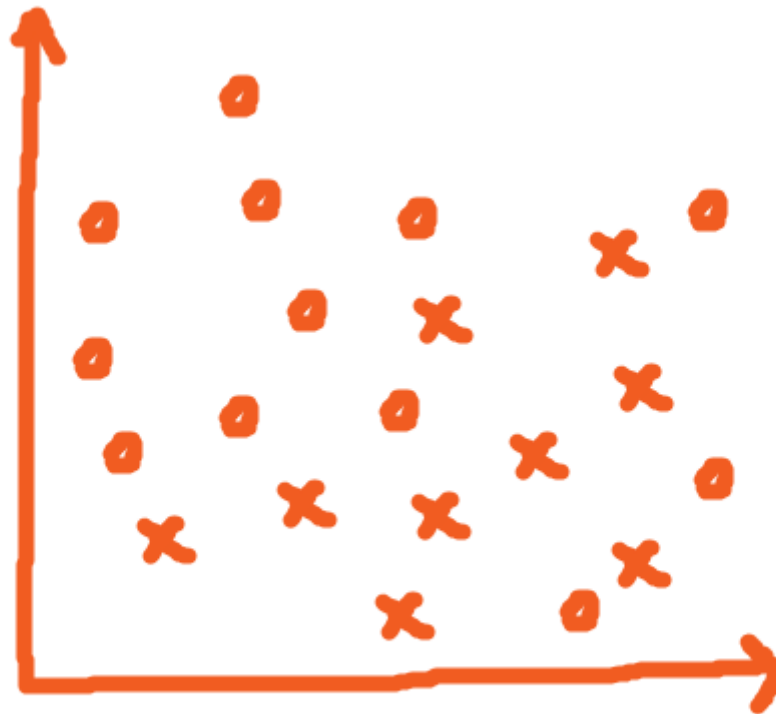
Clustering Method



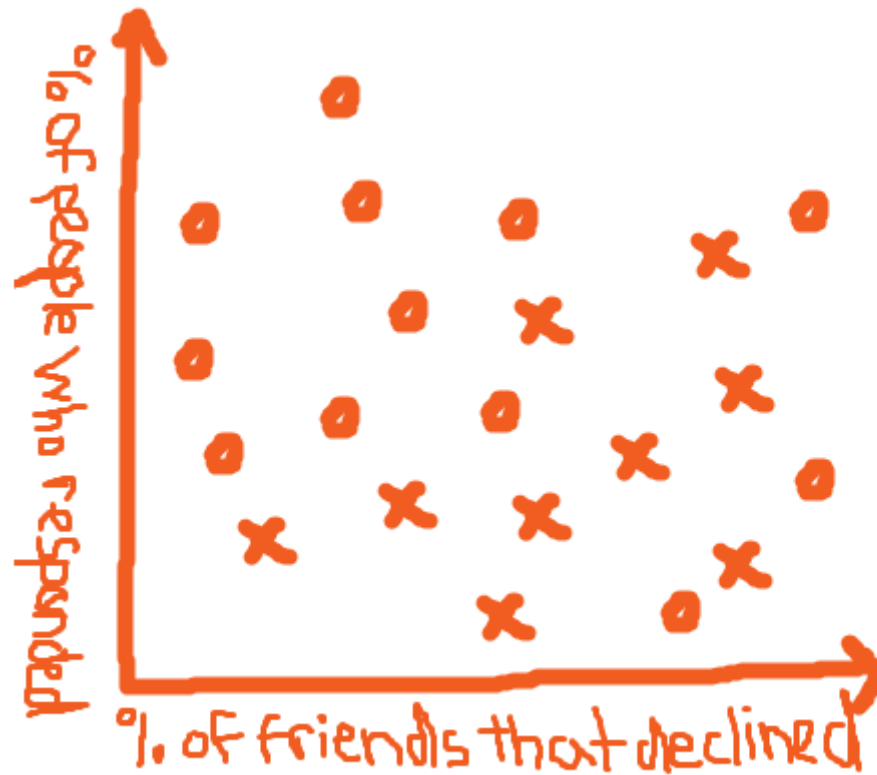
Clustering Method



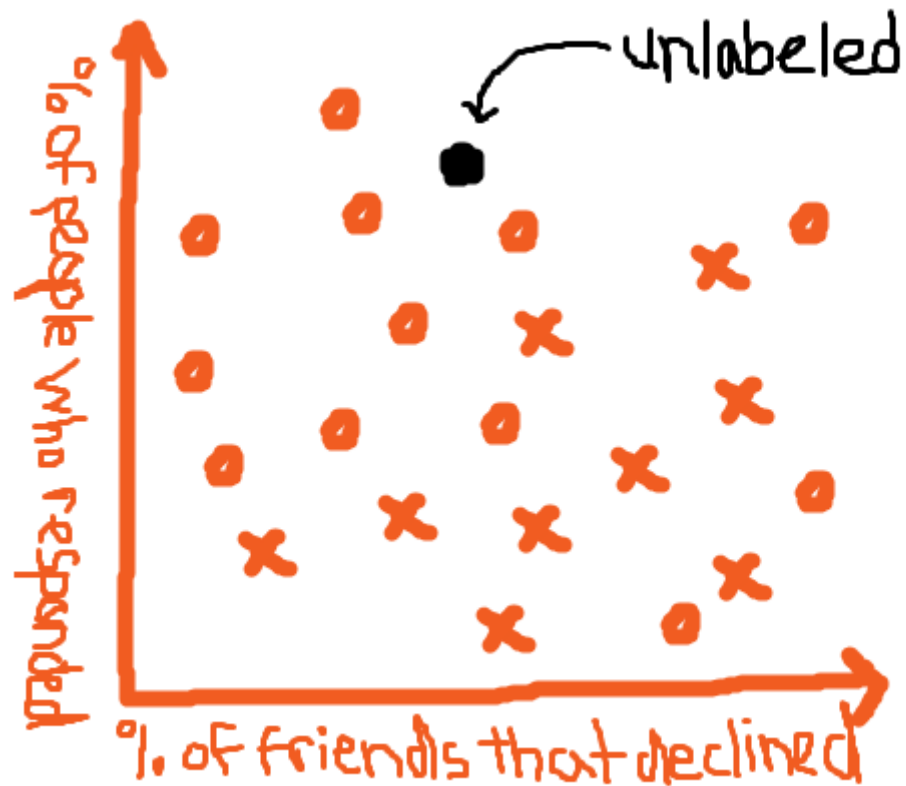
Classification Method



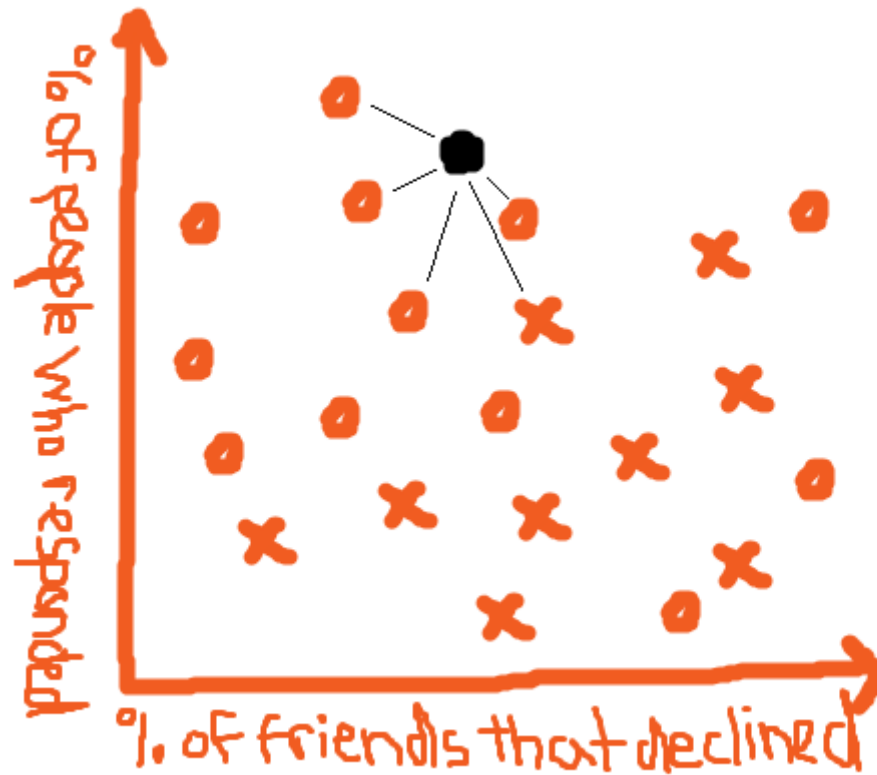
Classification Method



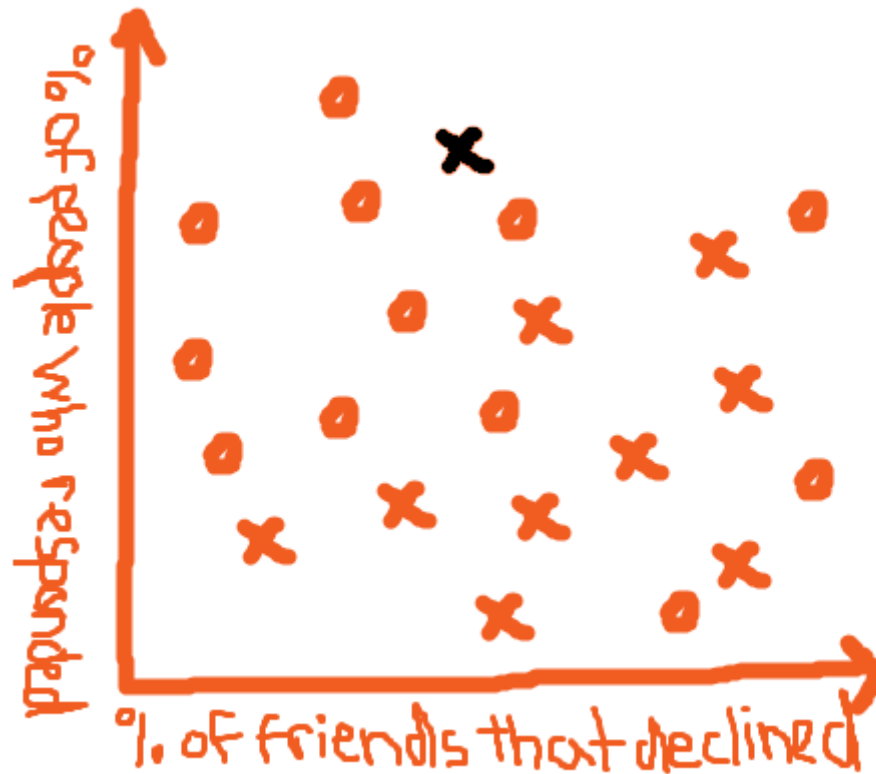
Classification Method



Classification Method



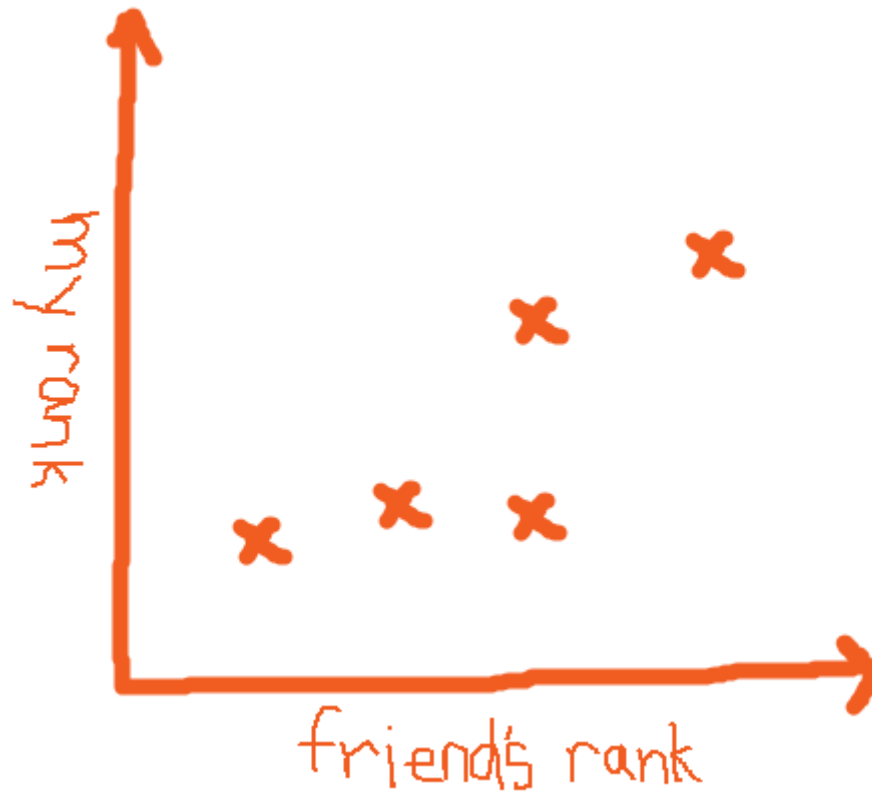
Classification Method



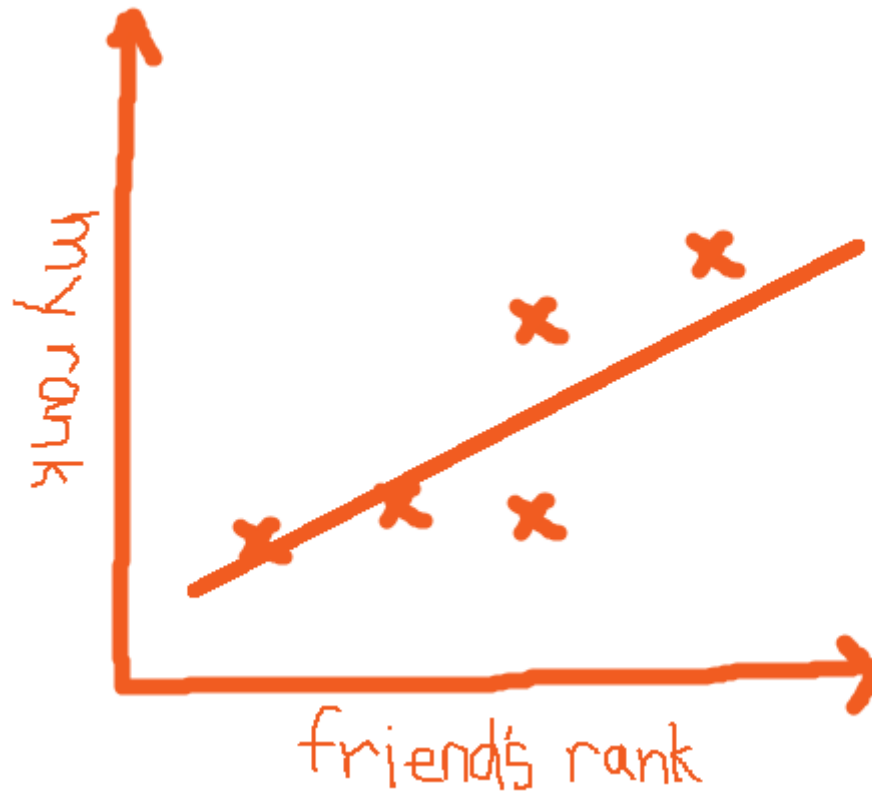
Collaborative Filtering Method



Collaborative Filtering Method

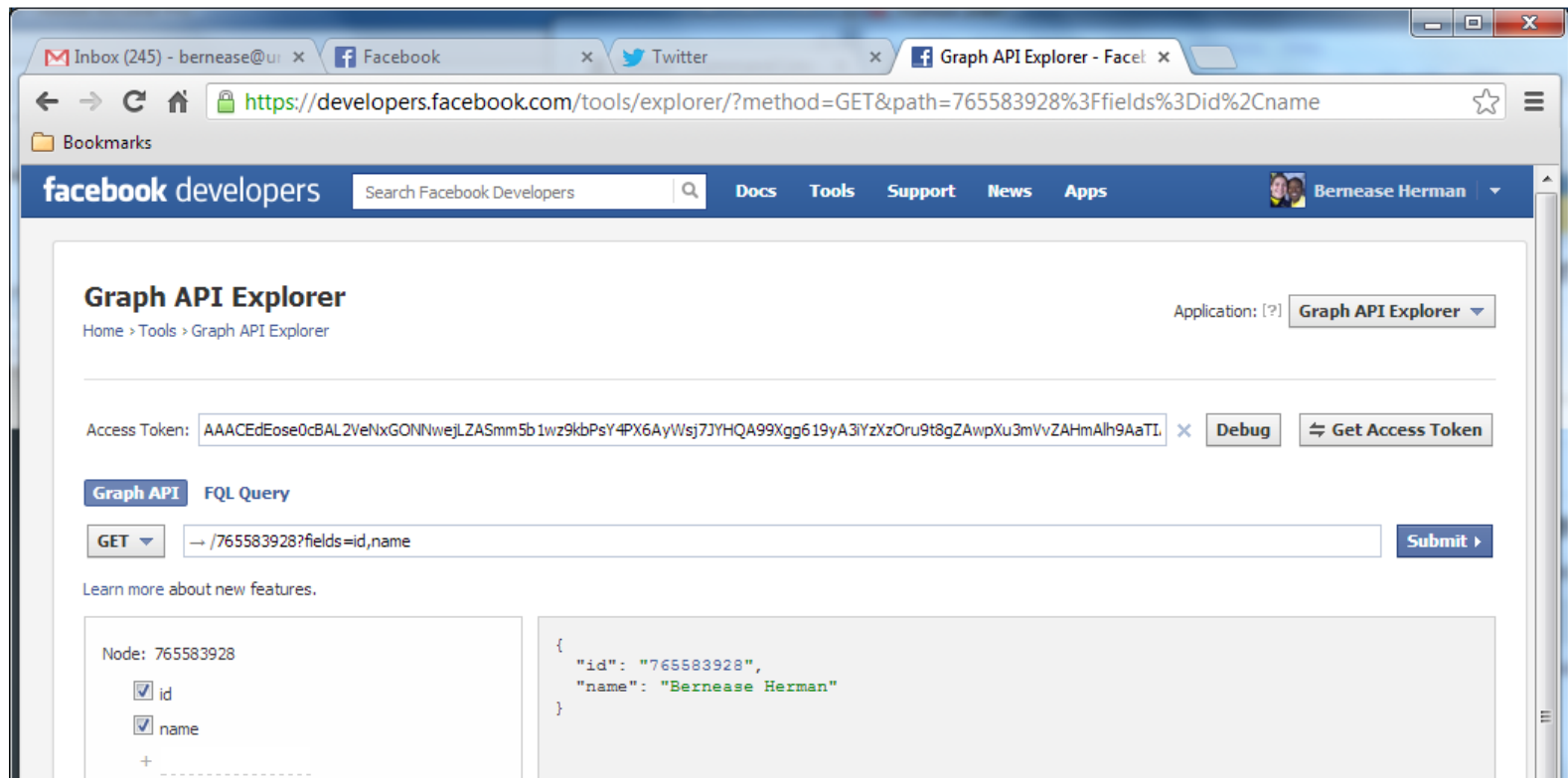


Collaborative Filtering Method



Getting Your Data

<https://developers.facebook.com/tools/explorer/>



The screenshot shows the Facebook Graph API Explorer interface. The browser tabs include 'Inbox (245) - bernease@ui', 'Facebook', 'Twitter', and 'Graph API Explorer - Facet'. The address bar shows the URL: <https://developers.facebook.com/tools/explorer/?method=GET&path=765583928%3Ffields%3Did%2Cname>. The Facebook Developers header is visible with a search bar and navigation links: Docs, Tools, Support, News, Apps. The user profile 'Bernease Herman' is shown in the top right.

Graph API Explorer
Home > Tools > Graph API Explorer

Application: [?] **Graph API Explorer**

Access Token:

Graph API **FQL Query**

GET

Learn more about new features.

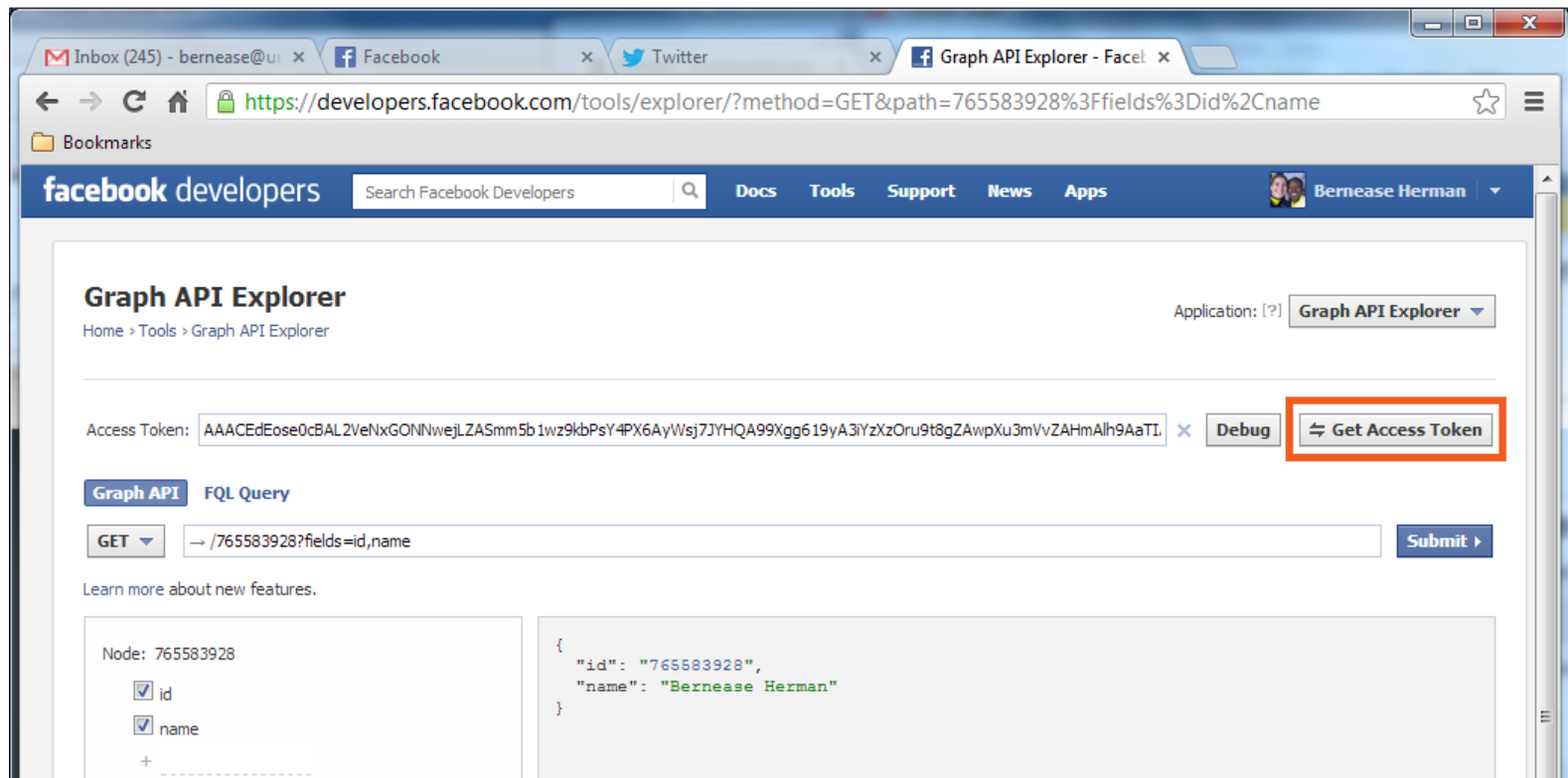
Node: 765583928

- ☒ id
- ☒ name
- ☐ +

```
{
  "id": "765583928",
  "name": "Bernease Herman"
}
```

Getting Your Data

<https://developers.facebook.com/tools/explorer/>



The screenshot shows the Facebook Graph API Explorer interface in a web browser. The browser's address bar displays the URL: `https://developers.facebook.com/tools/explorer/?method=GET&path=765583928%3Ffields%3Did%2Cname`. The page header includes the "facebook developers" logo, a search bar, and navigation links for Docs, Tools, Support, News, and Apps. The user's name, "Bernease Herman", is visible in the top right corner.

The main section is titled "Graph API Explorer" and includes a breadcrumb trail: "Home > Tools > Graph API Explorer". On the right, there is a dropdown menu for "Application" set to "Graph API Explorer".

The "Access Token" field contains a long alphanumeric string. To its right are "Debug" and "Get Access Token" buttons. The "Get Access Token" button is highlighted with a red rectangle.

Below the access token, there are tabs for "Graph API" and "FQL Query". Under the "Graph API" tab, a "GET" method is selected, and the path is `/765583928?fields=id,name`. A "Submit" button is located to the right of the path field.

At the bottom left, under "Node: 765583928", there are checkboxes for "id" and "name", both of which are checked. A plus sign and a dashed line indicate additional fields can be added.

On the right, a JSON response is displayed in a light gray box:

```
{
  "id": "765583928",
  "name": "Bernease Herman"
}
```

Getting Your Data

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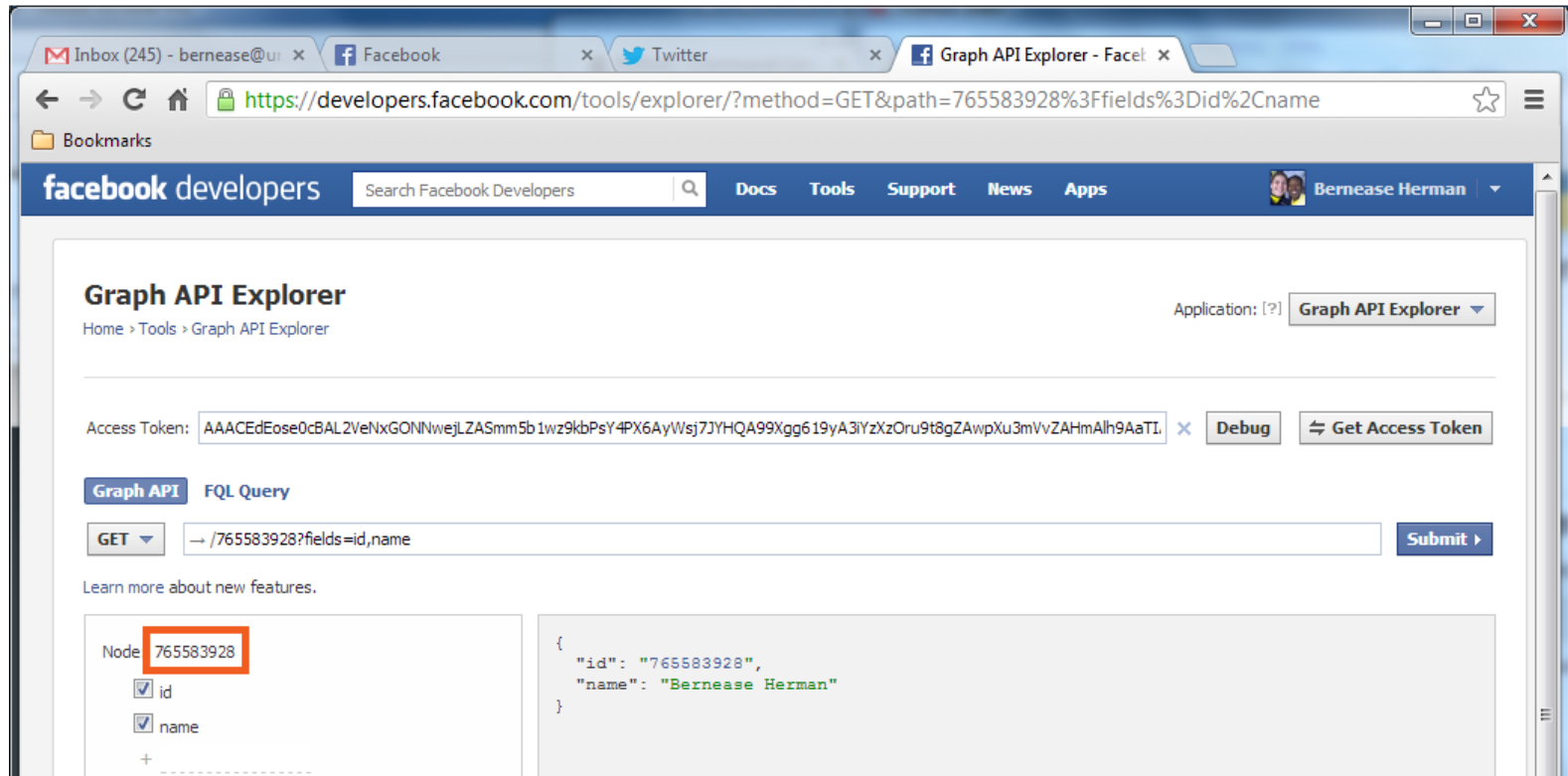
The main section is titled "Graph API Explorer" and shows the "Application" as "Graph API Explorer". The "Access Token" field contains a long alphanumeric string, which is highlighted with a red box. Below this, the "Graph API" tab is selected, and the "FQL Query" section shows a "GET" method and the path `/765583928?fields=id,name`. A "Submit" button is present.

Below the query input, there is a section for "Node: 765583928" with checkboxes for "id" and "name", both of which are checked. To the right, the JSON response is displayed:

```
{
  "id": "765583928",
  "name": "Bernease Herman"
}
```

Getting Your Data

<https://developers.facebook.com/tools/explorer/>



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The main section is titled "Graph API Explorer" and shows the "Application" as "Graph API Explorer". The "Access Token" field contains a long alphanumeric string. Below this, the "Graph API" tab is selected, and the "FQL Query" section shows a "GET" method and the path `/765583928?fields=id,name`. A "Submit" button is present.

Below the query input, there is a section for "Node" with the value `765583928` highlighted by a red box. Underneath, the fields "id" and "name" are checked, and a "+" sign indicates more fields can be added.

On the right side, the JSON response is displayed:

```
{
  "id": "765583928",
  "name": "Bernease Herman"
}
```


Getting Your Data



A screenshot of a web browser window with multiple tabs. The active tab is titled "https://graph.facebook.com/765583928/events?limit=2500&since=2006-01-01&until=2013-04-05&access_token=AAACEdE". The browser's address bar shows the URL. Below the address bar, a "Bookmarks" bar is visible. The main content area of the browser displays a JSON response from the Facebook Graph API. The JSON is formatted with syntax highlighting, showing a list of events under the "data" key. The events include details such as name, start time, end time, timezone, location, ID, and RSVP status.

```
{
  "data": [
    {
      "name": "Hack Machine Learning",
      "start_time": "2013-04-02T18:30:00-0400",
      "end_time": "2013-04-02T20:00:00-0400",
      "timezone": "America/Detroit",
      "location": "1010 DOW",
      "id": "125407540978291",
      "rsvp_status": "attending"
    },
    {
      "name": "Tech Startup Panel - Presented by Michigan Hackers",
      "start_time": "2013-03-27T18:30:00-0400",
      "timezone": "America/Detroit",
      "location": "1200 EECS, The EECS Building, EECS Land",
      "id": "143545819154775",
      "rsvp_status": "attending"
    },
    {
      "name": "Reelect Andy Modell + forUM for CSG Engineering Rep",
      "start_time": "2013-03-27T00:00:00-0400",
      "end_time": "2013-03-28T23:55:00-0400",
      "timezone": "America/Detroit",
      "location": "vote.umich.edu",

```