This document presents a computational analysis of Twitter activity during the wildfire in Mati, Greece, using Python for data processing, filtering, and visualization. The dataset includes tweets collected during the event, along with metadata such as timestamps, author information, geolocation (if available), interaction metrics, and retweet indicators.

Key Points:

1. **Introduction**: The study aims to analyze Twitter activity during the Mati wildfire, focusing on user behavior, trends, and information dissemination. It involves:
    - Filtering irrelevant tweets based on keywords.
    - Detecting periods of high activity.
    - Analyzing author behavior (tweet volume, interaction levels).
    - Visualizing trends, such as daily and weekly activity.
    - Identifying influential users based on retweets and engagement.
2. **Dataset Description**: The data consists of tweets from Twitter's Streaming API during the wildfire. The main columns in the dataset include:
    - Author ID, timestamp, tweet text, interaction metrics (likes, retweets, replies), retweet indicators, geolocation (if available), tweet ID, and source (mobile, desktop, third-party apps).
3. **Methodology**:
    - **Filtering Tweets**: Only relevant tweets containing specific keywords related to the wildfire were included in the analysis. Preprocessing steps included removing stop words, tokenizing text, and standardizing case.
    - **Peak Activity Detection**: Peaks in tweet volume were detected using a moving average and a threshold-based approach, where activity above two standard deviations from the moving average was considered a peak.
    - **Author Activity Ranking**: Authors were analyzed based on tweet volume, activity duration, and frequency of posts.
    - **Hourly Analysis**: Tweets were grouped by hour to identify peak activity times during the day.
    - **Interaction Metrics**: The level of interaction (likes, retweets, replies) was measured for each author.
    - **Retweet Behavior**: The ratio of retweets to original posts was analyzed to identify users who primarily share content.
    - **Burst Analysis**: Temporal bursts of activity were detected, focusing on the origin of spikes in tweets and identifying early influential users who initiated or fueled discussions.
4. **Results**:
    - **Filtered Tweets**: The filtering process removed irrelevant tweets, enhancing the accuracy of the analysis.
    - **Peak Activity Periods**: Clear peaks were observed in tweet volume, often aligned with major events during the wildfire crisis, such as news reports or official announcements.
    - **Active Authors**: A small subset of users contributed disproportionately to the conversation, influencing the public discourse.
    - **Interaction Trends**: High interaction levels were associated with influential users who consistently tweeted during peak periods.
    - **Retweet Behavior**: Some users heavily relied on retweets, amplifying information during the crisis.
5. **Conclusion**: The study provides valuable insights into Twitter usage during the Mati wildfire. It identified peak periods of activity, influential users, and patterns of information dissemination. The methodology can be applied to future crisis monitoring and influence detection studies.
6. **Code Implementation**: The analysis was carried out using Python with libraries such as

pandas, matplotlib, spaCy, and NumPy. Custom functions were created to preprocess data, detect activity bursts, analyze user engagement, and visualize trends.

This summary encapsulates the core aspects of the computational analysis conducted on Twitter data during the Mati wildfire.