

Customer Churn Management

Overview of Current State-of-the-Art

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Recap Previous Discussion

- NRB/HEC-ULg to collaborate on **Churn Management**
- Specifically
 - Leveraging on customers' behavior to improve churn management (prediction)

Aims of this Presentation/Agenda

- Introduction: Customer Churn Management
- Extant techniques for Customer Churn Management;
Weaknesses
- Proposed contribution/offer

Introduction: Customer Churn Management

Customer Churn Management

- 2 components to Customer Churn Management (CCM)
 1. Identification of customers intending to switch to competitor
 2. Proactively targeting them with incentives to induce them to stay
- Component 2 more challenging to implement
 - Ideally: incentives aligned with customers preferences
 - Preferences embedded within behavior
 - Expressed via various means, incl. language/texts
 - Hard to acquire, unlike other customer information (e.g. demographics) → **positioning our contribution/offer**

CCM (cont)

- Customer Churn
 - Significant problem in many industries
 - Markets with certain degree of maturity/saturation
 - New customers acquired by cannibalizing from competitors
- Companies' focus, marketing efforts shifts
 - **Customer acquisition → Customer retention**
 - Customer acquisition cost >> Customer retention cost
 - Estimates: acquisition 5-10 times costlier than retention
- Customer Churn most prevalent in
 - News, publishing
 - Financial, insurance services
 - Electric utilities, Internet, mobile providers
 - Automotive (vehicle warranty)
 - **(Companies → staff turnover)**

CCM Performance

- Not all customers worth retaining
 - Low CLV (Customer Lifetime Value)
 - Not all customers will churn
 - Limited resources
- CCM performance
 - Ability to identify churners among **top percentile of customers with highest churning risk**
- Lift measure at threshold, $0 < T < 1$
 - Ratio number of churners among T customers with highest risk to number of churners in random, size T, sample
 - E.g. lift of 3 at $T=0.01$
 - Taking 1% of customers with highest churning risk
 - 3 times more churners compared to
 - Equally sized random customer sample

Factors Affecting Churn

1. Customer Satisfaction

- Customers' overall evaluation of performance
- Backward-looking(performance to date)

2. Relationship Commitment

- Desire to maintain relationship; loyal even if low satisfaction
- 2 types: calculative vs. affective
- Calculative: rational, economic-based dependence (due to lack of alternatives or switching cost)
- Affective: developed through reciprocity, personal involvement
- Forward-looking (future commitment)

3. Trigger

- Factors that change relationship basis
- 2 types: situational vs. reactional
- Situational: Changes in customers' life
- Reactional: Perceived service deterioration

Typology of Churn

- 3 main classes of churn of different value

1. Uncontrollable

- Beyond company's control, e.g. address change, death
- Misleading brand loyalty metric → defection not due to service quality

2. Involuntary

- Customers revoked/service withdrawn, e.g. defaulting on payment
- Not much value to company

3. Voluntary

- Customers conscious decision to churn
- Tech-based reasons (latest products/services from competitors)
- Economic-based reasons (better prices from competitors)
- Quality (poor coverage, bad call-center experience)
- Within company's control (vs. Uncontrollable)
- Most valuable to company

Extant Customer Churn Management Techniques & Weaknesses

Extant CCM Techniques

- Several CCM techniques exist
- Underlying assumption
 - Churners exhibit changes in , uncommon behavior
 - E.g. changes in calling patterns
- Behavior formalized in terms of “structured data”
 - Purchase amounts
 - Product categories
 - Number, duration of calls
 - Demographics (age, sex, revenue)
 - Subscription renewal before expiry
 - Subscription duration
- CCM (prediction)
 - Data mining (decision trees, neural networks, association rules)
 - Regression-based methods (logistic regression)

Extant CCM Techniques - Weaknesses

- Suffer from 2 main weaknesses
 1. Models' predictions limited to “who”, “when”
 - Customers' likelihood of churning, time of churning
 - Modeling information (e.g. demographics) partial reflection of behavior
 - Unable to infer *churn reason/root-cause* → “why”
 - More valuable to companies
 2. Exclusively focus on individual customers
 - Ignore social networks within which customers operate
- Possible Reasons
 - No in-house expertise for more sophisticated data modeling, analysis
 - No ready-to use frameworks, applications

Proposed Contribution/Offer

Proposed Approach – Churn Root Cause

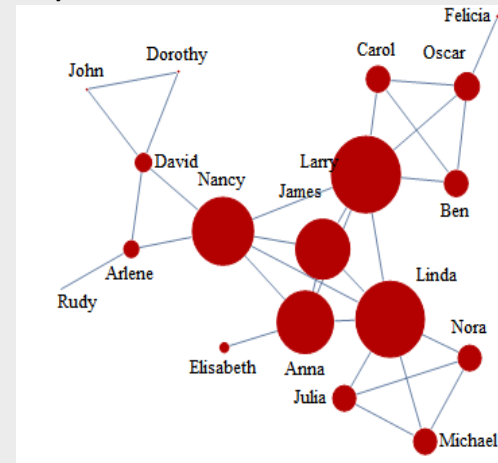
- Need for model to predict root-cause of churn (“why”)
- Requires comprehensive understanding of customer behavior
 - Wishes, wants, needs, preferences
 - Sentiment (opinions, attitudes) towards products, services
- Expressed, conveyed via linguistic devices
 - *I would like to also have CNN* (wish)
 - *I want to have the German version, now!* (want)
 - *I have to change my subscription plan* (need)
 - *I like the old version better* (preference)
 - *I **like** this show, I **love** this show* (same emotional valence, but different intensity)

Proposed Approach – Churn Root Cause (cont)

- Automatic identification from language/text: Challenging
 - Wishes, wants, needs, preferences implicitly expressed
 - Quantifying emotions valence and intensity (love vs. like)
- Requires novel algorithms/techniques in
 - Natural Language Processing (NLP)
 - Machine Learning (ML)
- Information sources
 - Facebook comments, tweets, messages in forums, call center emails
- Other useful sources
 - Number of comments, likes, shares on Facebook
 - Number of replies, re-tweets, favorited on Twitter

Proposed Approach – Social Network Analysis

- Global view of customers, within ecosystem
 - Social contagion (viral spread) phenomenon in social networks
 - Churned customer could influence social connections to churn
- Social Network Analysis algorithms
 1. Model social networks of customers
 - Social network as weighted directed graph (Neo4J graphDB)
 - Members = nodes
 - Weighted edges = strength of member relationships
 2. Identify network leaders/most influential member
 - Centrality measures, e.g. eigenvector, PageRank
 3. Model information flow among members
 - Modeling the flow, decaying diffusion process
 - Processing, understanding flow contents, *“why are you still with this company” vs. “How are you”*



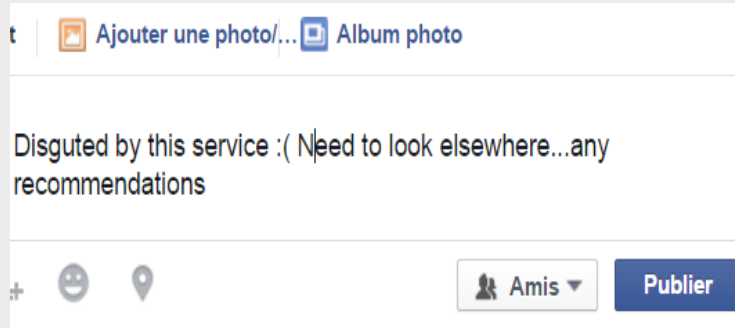
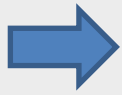
Proposed Approach - Personalized Recommendations

- Extracted information
 - Wishes, wants, needs, preferences
 - Likes, retweets, shares, replies,...
 - Social connections
- Incorporate in existing CCM models
 - Make personalized product recommendations
 - Reduce churn

Proposed Framework



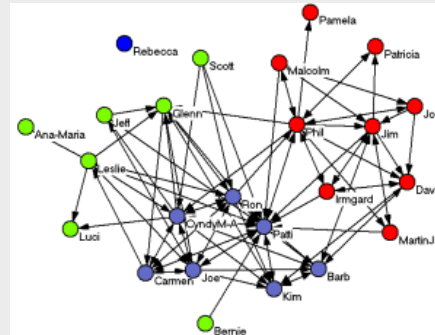
Customer John Doe



NLP Algorithms



Dissatisfied, angry customer
→ Potential Churner



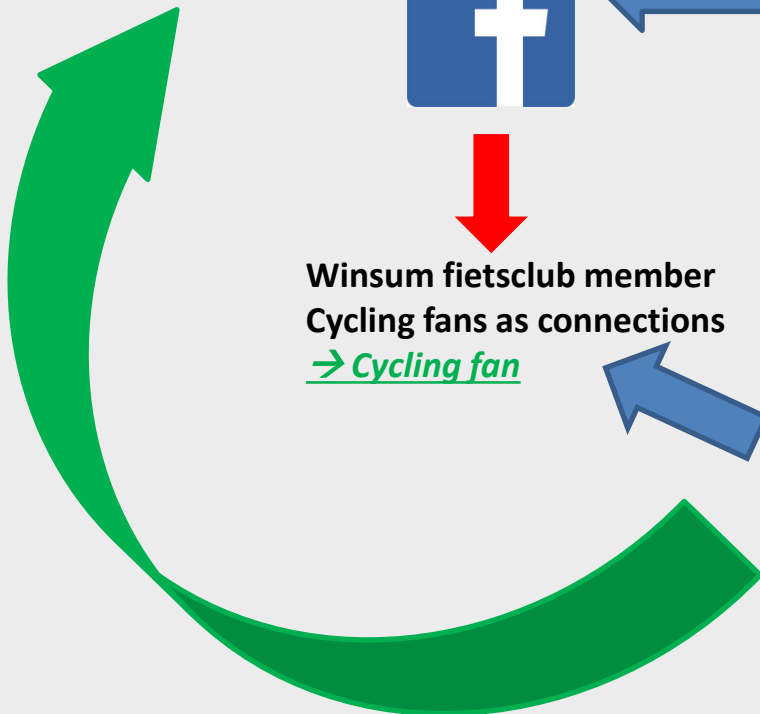
SNA Algorithms



Winsum fietsclub member
Cycling fans as connections
→ Cycling fan



Recommender System



Propose free VIP lodge admissions for Liège-Bastogne-Liège finish

Clustering – Fundamental, Initial Step

- Important to cluster/segment customers prior to analysis
 - Avoid too general results
 - Difficult to target specific customer groups
 - Important for incentives, recommendations
- Traditional clustering dimensions
 - Descriptive statistics derived from demographic, usage data
 - E.g. mean age, revenue, usage pattern
- More innovative clustering dimensions
 - RFM (Recency, Frequency, Monetary)
 - Strength of social network connections → cliques



THANK YOU

- Other notes:

Need to consider other events/information to enhance churn models:

- Competitors' offering
- Disruptions
- Sequence of events (e.g. someone getting married or having children → recommend services to partners or offsprings, e.g. telephone)

- Future steps and To do:
 - Next meeting (in 2-3 weeks time) to evaluate different configurations/organization of a collaboration in the context of a chair
 - Prepare “templates” with different chair collaboration configuration (Sandra)
 - Doodle to plan next meeting (Ashwin)