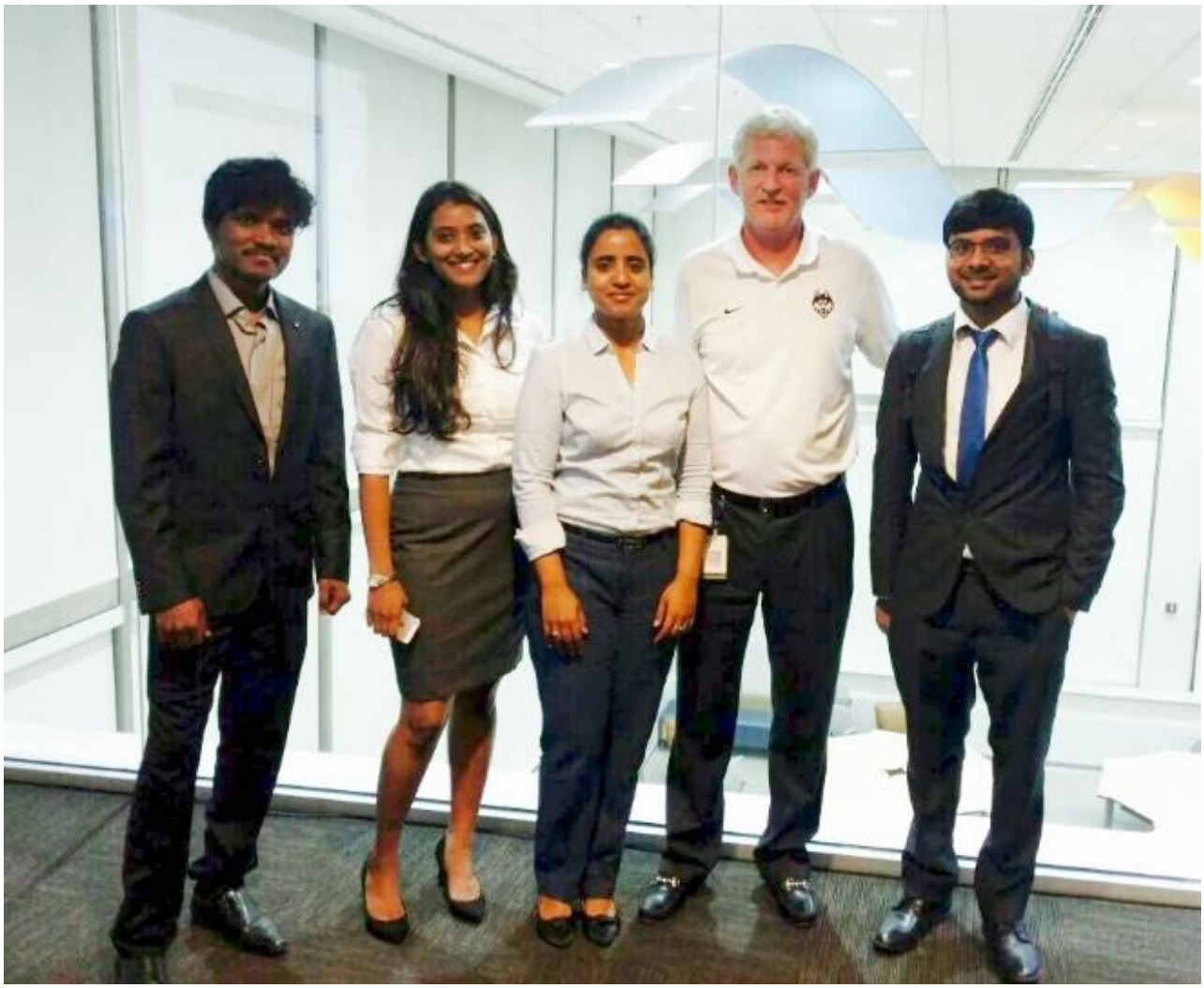
MSBAPM Newsletter

July 2017 Edition



IN THIS MONTH..

SEE YOU NEXT TIME!

The Capstone Experience

- Milind Jagre

For the first time in the history of BAPM, capstone project was offered in a summer session. Students who wanted to graduate in a year's time requested the BAPM management, and they agreed happily seeing the enthusiasm.

Before this semester, Capstone Project was offered either in Fall or Spring semester over the period of 3 months. This time, since the period was only a month, students had to spend more time on the project and were challenged by Prof. John Wilson to present the quality content. The final presentation was scheduled on July 5th, and after going through 8 presentations, both professor and the sponsor were quite happy with the students' work and sponsors got some useful insights about their business.

So, let us go through this journey and see what were the key takeaways from this grueling one month.

The sponsor for this Capstone Project was Basement Systems[i], Inc. Basement Systems[ii] is the world leader in developing and providing products that result in dry, below-grade space. They develop solutions and deliver them through a trusted network of trained, reliable dealers. They specialize in "All Things Basementy!".

You can check out their website at www.basementsystems.com

We contacted one of the teams – Team 1, working on this project to get an idea of what kind of work they are doing to derive some useful insights and analytics useful for Basement Systems' business. Team 1 spent most of their time collection of external data, cleaning of existing data and trying to join it with external data, doing the market basket analysis for providing recommendations, trying to build a model to predict the customer behavior, and proving marketing strategies depending on the customer demographics, the geographical area, and the monetization aspects.

The findings presented by Team 1 were backed up by different teams as well, as their analysis also showed the same result. The one distinguishing thing that Team 1 did was to focus on only one product, and they built their story around it.

The key takeaway from this Capstone Project was that though your analytical skills are important to derive the useful insights, the Project Management part of the BAPM wins the race because the last impact is created by the presentation which plays a huge role.

Here is team 1 after one of their meetings.

Infinity and beyond

-Neelakshi Saxena

Another car passed by, another pair of strange eyes glanced towards him, full of pity. No-one stopped to offer him food, or clothes or a company. Marghoob belonged to the streets, since the time he could remember. He was the prince of these streets; they belonged to him. He knew every nook and crevice of this place.

Marghoob was found in a trash can on a small road in Seattle. A small orphanage adopted him, and he survived. He had friends with whom he grew up, all poor orphan kids. Every day, someone would adopt one of his friends. Every day, the rest would sit in the hope that it's their turn today. A family with a house, warm food, and parents to love. Parents: that was the biggest dream each one of them resided in their hearts. As the count of kids grew in the orphanage, the chance of getting adopted reduced with them growing old.

The orphanage was a small and poor place. It was run on funds from a wealthy businessman. Over the years, the funds reduced and so did the living conditions. It became as pathetic as the slimy streets. Dirty washrooms, torn clothes, smelly beds and a pittance of food. Small kids cried into the nights with their bellies aching with food. Marghoob had grown into his seventh year. Seven years of seeing the poverty and conditions deteriorating year after year. Whenever he would feel gloomy, he would go out into the streets and roam around. He scraped for food from the trash bins, anything to keep his stomach from grumbling. And people did throw all kinds things, delicious cakes, rotting fruits like berries and plums, that he could have only imagined tasting. He read about them in the books that orphanage offered.

He had been roaming these streets since the time he could remember, probably from when he had learned to walk. He had a friend too. They both started out when they were little, and their bond kept growing strong with each day. Marghoob found him taking shelter under a small polybag from heavy rains, that someone had placed over him. This cute little tiny puppy who was his accomplice now. They trotted around the streets together in the hunt for food, chasing pigeons and playing together.

Marghoob wasn't allowed to bring his friend to the orphanage because it was a street dog. So, every day, his friend would wait outside in the morning for Marghoob to join in their adventures. Such a friendship it was that they shared every item of food they found. Two innocent hearts connected by love and loyalty towards each other. Marghoob had built him a small house from the cardboard boxes he found in the trash.

It was raining heavily that day. It had been pouring down all day long yesterday, and it hadn't stopped today. Marghoob glanced out the door of his orphanage. His friend wasn't there today. He was starting to get worried about him. He didn't know how long its house will hold. He wasn't allowed to

go out of the orphanage because of the heavy rains and flood warnings. But he had to see if his friend was okay. Maybe he could persuade people here to allow him to bring his dog inside. Hours passed by and there seemed no indication of the rain stopping. He was scared to go out alone. As usual, children were crying again, the smaller ones always did.

He couldn't wait any longer. The evening was about to come; the sun was almost set. He plucked up his courage and ran out the doors before anyone could stop him. His friend wasn't there where he had built the house. The cardboard box was soddened and in pieces. Marghoob panicked. He had to find his friend. He ran through the streets they had so often covered together. He checked across the lanes, behind the dumpsters, even around the drain pipes. The dog was nowhere to be found. Soaked down to the bones, cold and hungry, Marghoob started crying. Where was his friend, his companion of all these years? It was getting darker. He was not allowed to stay out late. The rain was pouring down incessantly.

Tired, cold and hungry, he kept roaming the streets in one last hope of finding his dog. His orphanage was around the corner when he saw his friend lying on the pavement, shivering and crying. It was probably trying to get to Marghoob, but just like his human friend, the dog was too wet and extremely cold. Marghoob ran to him and placed his tiny hands on his friend's head. The dog opened its eyes slightly, saw Marghoob, and with a yelp, went cold.

Marghoob sat there for hours, not knowing what had happened to his friend. Another car passed by, another pair of strange eyes glanced towards him, full of pity. No-one stopped to offer him food, or clothes or a company. Just like any other day. Today, he was really alone. His friend wouldn't open his eyes. Marghoob did not want to leave him alone lying there, on the side of the road. He placed his head on the cold head of his dog and closed his eyes, remembering all the times they ran down the streets together. He never felt when the eternal sleep came in.

It stopped raining the morning after, and people found a child and a stray dog lying side by side on the road, dead. Newspaper headlines read, "Eternal bond of friendship between man and dog, in life and to Infinity and beyond."

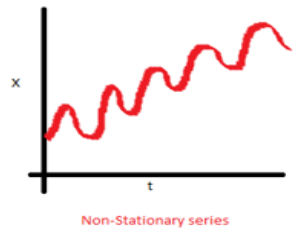
A Primer on Time series Forecasting – Yashwanth Musiboyina

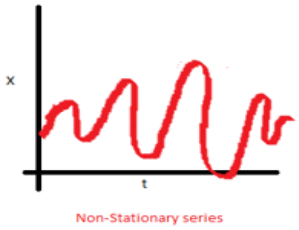
Setting Expectations

While I was pondering over what topic to choose for BAPM newsletter, I thought I'd pick something that acts as a three-page Cliffs notes to the first topic in Data mining class. As graduate students in analytics, we learn a wide variety of quantitative techniques that help businesses monetize data. As much as being excited about learning them, I'm equally paranoid about the depth to which I understand the math behind these techniques. Thanks to all the professors who taught me Math & Statistics, I figured out a way to make peace with it. I evaluate myself using 'The Grandma test': qualifying myself to know a statistical concept well enough if I can intuitively explain it to my grandmother. So, please continue reading the article even if you've not heard (or read) about forecasting or have never taken a math course in the past.

Decomposing Time Series

As wisely quoted by an anonymous writer, "A good forecaster is not smarter than everyone else, he merely has his ignorance better organized." An imperative to good forecasts is breaking down the historical data to its components. While there are several kinds of data that one could use to forecast, I will stick to the quantitative methods that deal with time series (because it's sequential) data observed at regular intervals of time (e.g., hourly, daily, weekly, monthly., etc.) Two broad components of a time series data are Non-Stationary and Stationary. As the names indicate, one has variability with time while the other doesn't. Let's understand this through an example. Fruits and vegetables taste better and fresher at certain times of the year — yet, the grocery stores probably offer the same produce selection across the year. Well-informed and health-conscious customers grab strawberries during summer while ignorant ones like me buy them anytime round. If strawberry-sales is the time series variable of interest, customers in the former category contribute to the non-stationary component while the customers in the latter segment make the stationary component of sales. To simplify it further, some purchases don't get affected by time (and hence stationary) while others do. We could identify these components by looking at a scatterplot with time on X-axis and sales on Y-axis.





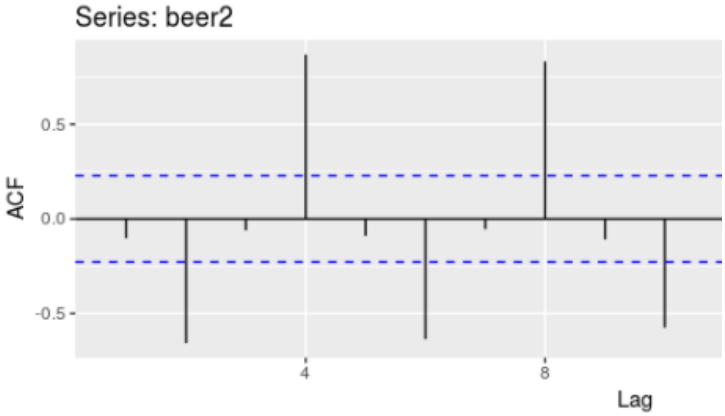
Visualizing Simple Time Series

Time series that contain non-stationary components look like the scatter plots above. From left to right, each of them displays a unique characteristic of non-stationary components. The first reflects a trend (directional and deterministic in its next move), second shows seasonality (a pattern that repeats itself at equal intervals of time), and the third reflects heteroscedasticity (unequal variability across a range of time.)

Diagnosing the Reality

Although we wish time series look as revealing as the above charts, they seldom offer you that convenience. In such cases, something called as correlograms or ACF plots (Autocorrelation function

plots) come to our rescue.



Their use-case is simple: If the black bars fall beyond the blue dotted lines, non-stationarity exists. To answer your most obvious question of why: Each bar represents the correlation between a lag component i.e. a difference between a time series value and its preceding value. For example, lag 1 in a daily sales time series represents differences in sales between a day and its previous days; lag 8 indicates a difference in sales between today and the same day last week. What does correlation between lags even mean? If the day before yesterday's sales could explain yesterday's sales and yesterday's sales could give direction for today's sales, there's a high correlation at lag 1 viz., potentially the characteristic of "trend" component. If last Friday can explain this Friday's sales, there's high correlation at lag 8 viz., potentially the characteristic of "seasonality" component.

Next Steps

The first objective in forecasting is to model the non-stationary components through a family of forecasting methods called as Exponential smoothing. To test if these models capture the non-stationary part, we diagnose the residuals using ACF plots that should now be within the limits as the correlation between lags has been stripped. Once accomplished, we further dive into residuals (white noise and more) to find interesting patterns that could be modeled using a family of ARIMA (Autoregressive Integrated Moving Average) models.

Through this article, I wanted to set the stage for forecasting methods by introducing the key components of time series and ways to diagnose them. In the next post (hopefully soon), I will discuss what goes into these models and how to evaluate their accuracy.

Happy Forecasting till then ☺

References

Forecasting: Principles and Practice, Hyndman & Athanasopoulos (2nd ed., 2017)
A Complete Tutorial on Time Series Modeling in R by Tavish Srivastava @ analyticsvidhya.com

7 Questions with Faculty: Xinxin Li

Give us a brief introduction about yourself.
I have been working at UConn since 2005 after I received my Ph.D. from the Wharton School at the University of Pennsylvania. Before then, I received my B.S. in MIS from the Tsinghua University in China. At UConn, I've taught courses at both undergraduate and graduate level, including Business Information Systems, Business Software Development, and Business Processing Modeling and Data Management. My research lies at the intersection of Information Systems and Marketing, with a focus on how the emerging technologies affect consumer behavior and subsequently firm strategies. I enjoy working with data to discover patterns as well as constructing analytical models to draw insights that are not readily available in data. I am among the first few people who studied online product reviews. My paper that examines the self-selection bias in online reviews has received over 600 citations.

How did you land your first teaching job?
Through the annual academic job market. I had applied for the assistant professor position at UConn before I graduated from Wharton. I love the flexibility in academia and the ability to choose the topics I want to work on. Interacting with and learning from the young generation is also fun.

How does it feel to be the part of BAPM Faculty?
Working with the BAPM students has been a challenging and enriching experience. I am always amazed by their motivation and creativity. They like to ask challenging questions and have also brought a lot of experience to the classroom. I found myself learning from the class constantly myself.

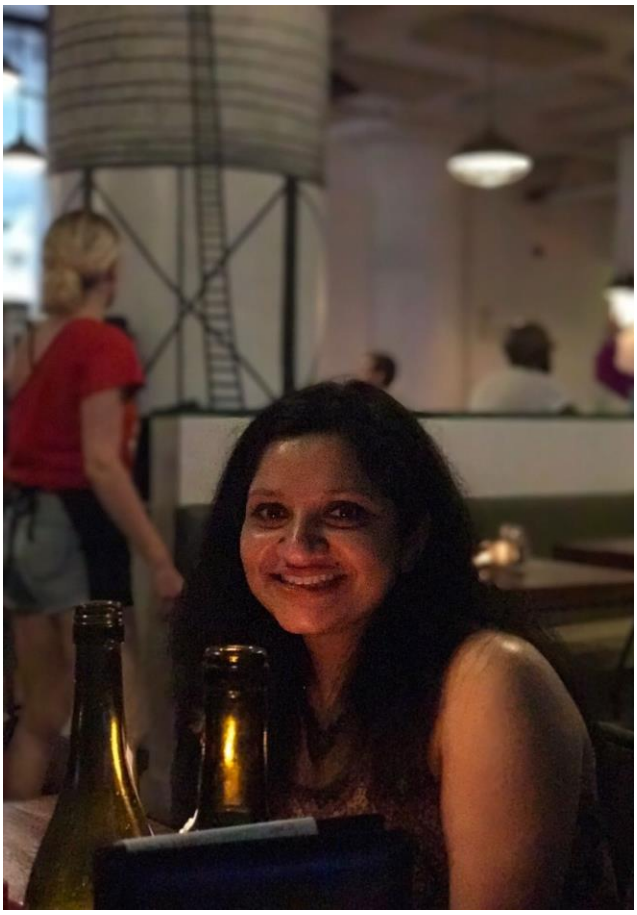
What are your hobbies and interests apart from making BAPM great?
I love music and enjoy watching movies, playing games, spending time with my kids, and traveling with my family.

Tell BAPM something surprising that we do not know.
I was in Tsinghua Campus Singer Competition finals twice when I was in college. I used to record myself sing and share it online. Old time fun.

What advice would you like to give to graduating BAPM students?
Be ambitious. Don't be afraid of changes and challenges. Don't settle into a comfort zone too quickly before exploring what excites you the most.

One thing that you would like to improve at BAPM.
More opportunities to meet with people from industry and work with real data, and more opportunities to facilitate learning among students with different background and knowledge base.

Interview with Alumni – Kinnera Ganti



Tell us about yourself.
I have hopefully mastered this answer from the multiple interviews I have given. ☺ I am working as a Data Science Analyst as a part of the Data Governance team at Aetna. I work on handling different kinds of internal and external requests for bringing in data along with building a customer tool set to help end users analyze data stored in Aetna's vast Hadoop environment. I worked at Infosys, Mangalore for almost three years before taking the leap to pursue my Masters. My career path is definitely not ideal – graduating with a Chemical engineering degree, jumping to software and the final switch (the best one yet) to Analytics!

But I am in a good place now thanks to the MSBAPM program at UConn!

What did you like about BAPM and how can BAPM improve?
I can't simply describe the 'like' as there were too many things that made the last 1.5 years worthwhile but the highlights were; the perfect combination of analytical and management courses offered essentially for grooming an analytics professional; flexible course options allowing me to understand the multiple sub-domains of analytics such as data science, business intelligence and relating them to my interests; the career workshops right from resume building to networking to interviewing were extremely helpful, not just in job search but in building and enhancing my profile in the last 2 years.

BAPM program is in great demand and growing at a fast pace. One way to improve the program would be to accommodate the requests the students in terms of availability of courses during all semesters.

In your opinion, which BAPM course helped you the most?
Coming from a background with basic statistics, I would say Data Analytics with R helped me the most! Professor Ram Gopal did an excellent job of revisiting the fundamentals of Statistics and following a proper hand on approach to get us used to the tool. He went an additional mile by not only sharing with us session notes but also sharing recordings which helped me most while preparing for my technical interview rounds.

Tell us your job story. How can current students work towards that direction? Please add the complete job-hunt story too.

Ha-ha! Let me tell you; this is not going to be easy and probably is not meant to be. Only because I feel there is so much to learn during this process that when you finally land a job, that feeling of satisfaction or relief makes all the struggle worth it. I personally feel it's a life lesson too. This being said, it depends from person to person. ☺ I started my application process around mid of September 2016 and went on all the way until the end of December. I applied to around 750-800 companies, interviewed with around eight companies in the second round and got an offer from 2 companies. I got an official offer from Aetna in January after the holidays.

I would recommend spending a minimum of 2-3 weeks to get your Resume, cover letter and update your LinkedIn before starting off the application process. This may take longer as it's not easy to get the perfect resume and that's okay! But it is essential to have one in place which will eventually go through multiple iterations during the application process. The next step would be to make a list of target companies, research the positions of your interest by looking into the company website. I did not have one initially, but I realized that making one gave me some direction, rather than applying randomly. The last step is to buckle up and APPLY! One thing to keep in mind while applying is to make sure there is a high-frequency match of the keywords on the job description and your resume. I believe this particularly increased my chances of getting calls.

Along with applying, it is VERY important to build your network. You will realize how important this is during the job search. Put yourself out there, but make sure you leave an impression.

Finally, one thing which proved helpful for me in the final interview stage is not to convince the interviewer on your technical skills and abilities, but your willingness to learn things you don't know, your ability to handle a difficult situation and how easily you can adapt to your work environment. If nothing, the right attitude will fetch you those brownie points and maybe even land you the job, who knows: P! This is pretty much an overview, but you will figure out the details as you take a deep dive into it ☺

As an alumnus, in what way, would like to be involved with the program? Any suggestions to improve the alumni participation with the program?

I would love to be involved in any way possible which would benefit the students, be it interacting with current and future students at a networking event or sharing my experiences at workshops.
MSBAPM actively reaches out to the alumni for their involvement in multiple events. They are already doing a good job ☺

How and where you used to hang-out here in Hartford? Any suggestions?

I hung out quite a bit in City Steam while at college. :D It is a convenient location and go-to place for great beer and nice music! But there are some great bars and restaurants in West Hartford too which I am still exploring. For nature lovers, the River front and the West Hartford Reservoir have some great trails for hiking and biking with scenic views.

What would you like to share which we haven't asked you?

Go with the flow, enjoy every bit of your time in college, be it ups or downs as you will need a story to tell at the end of the day. Irrespective of what you are looking for ☺

[i] http://www.basementsystems.com/

[ii] http://www.basementsystems.com/company.html