Homework 6
Network Dynamics Analysis

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Contents

1 Introduction

In this homework we have analyzed Network Dynamics (Network Dynamics) on different models proposed for this work. The main goal of this work is to identify the best model which fit on both aspects of Network Dynamics,

2 Results

2.1 Degree Distribution Analysis

2.1.1 Growth + Preferential Attachment

Parameter	Value
M	200002
N	100002
MAX	1105
M/N	1.99
N/M	0.50
MP	37263.76
C	205119.83

Table 1: Data Analysis over Growth + Pref Attachment

Distribution	Estimation
Displaced Poisson	1.59
Displaced Geometric	0.50
Zeta Gamma	2.29
Zeta Truncated	103002

Table 2: Estimation of Parameters: Growth + Pref Attachment

Distribution	AIC Value
Displaced Poisson	253849.2
Displaced Geometric	33974.32
Zeta Gamma 3	17100.8
Zeta Gamma	**0**
Zeta Truncated	1.966677

Table 3: AIC Selection: Growth + Pref Attachment

Growth + Pref.Attachment: Degree distribution at time tmax
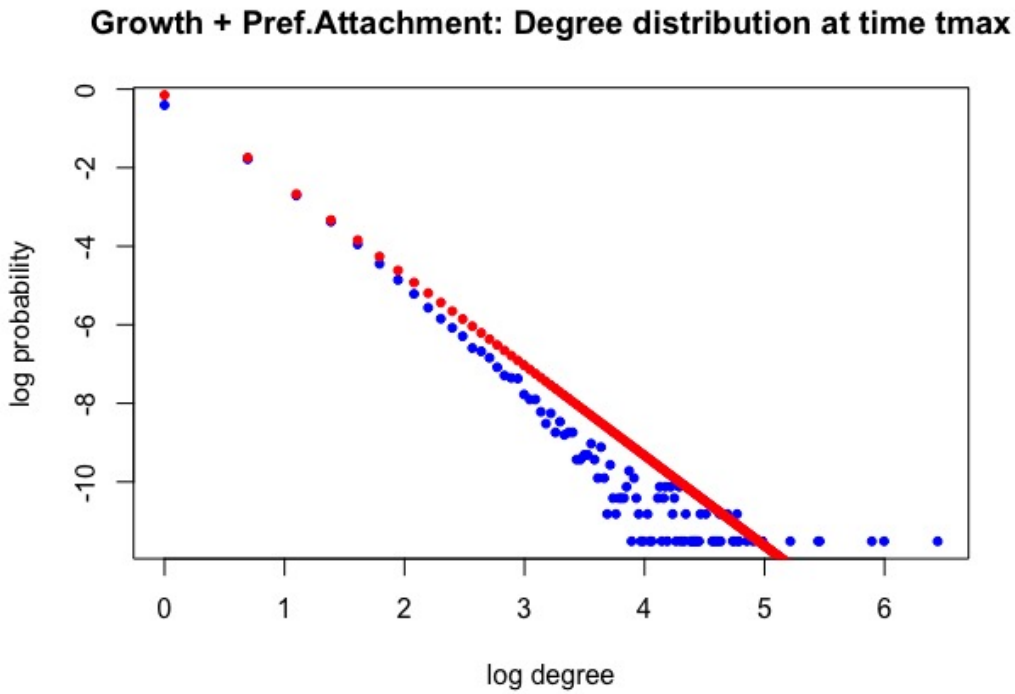

Figure 1: Degree t_{max} Growth + Pref Att with Zeta $\Gamma = 3$

2.1.2   Growth + Random Attachment

Parameter	Value
M	200002
N	100002
MAX	16
M/N	1.99
N/M	0.50
MP	50775.59
C	136242.14

Table 4: Data Analysis over Growth + Random Attachment

Distribution	Estimation
Displaced Poisson	1.59
Displaced Geometric	0.50
Zeta Gamma	2.07
Zeta Truncated	103002

Table 5: Estimation of Parameters: Growth + Random Attachment

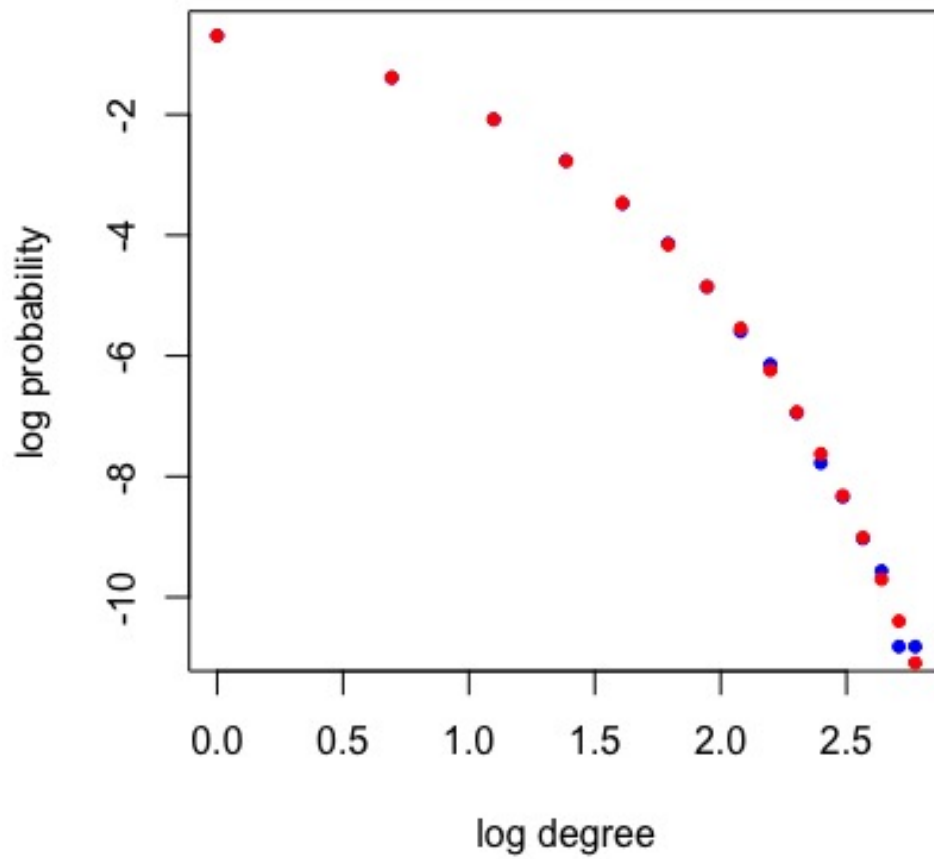| Distribution	AIC Value
Displaced Poisson	82119.5
Displaced Geometric	**0**
Zeta Gamma 3	64197.51
Zeta Gamma	24921.01
Zeta Truncated	24922.54

Table 6: AIC Selection: Growth + Random Attachment

Figure 2: Degree t_{max} Growth + Pref Att with Displaced Geometric

2.2 Time Growth Degree Analysis

2.2.1 Growth + Preferential Attachment

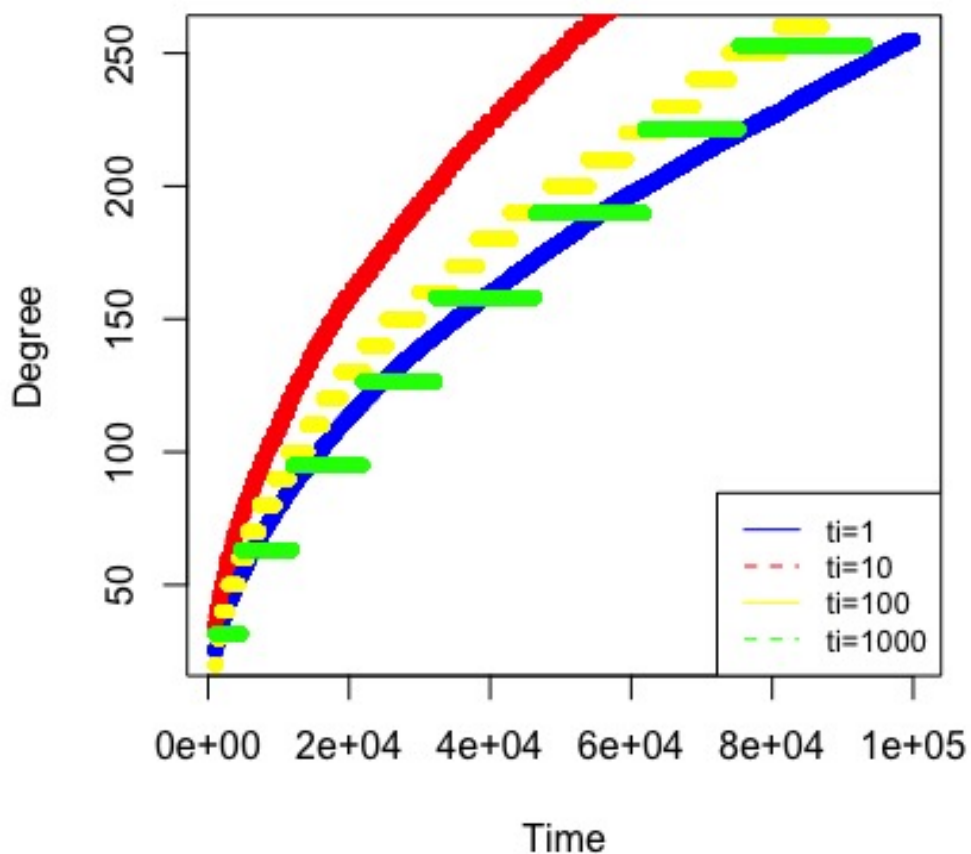## Time growth degree: Growth + pref.attachmen

Figure 3: Time Growth Degree: Growth + Pref Att

2.2.2 Growth + Random Attachment

3 Discussion and Methods

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4 Conclusions

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