
Memorandum

To: Professor Leslie Mateer
From: Bryan Gillespie
Subject: Analysis of Cover Letters and Résumés
Date: October 15, 2009

The purpose of this memo is to inform you about the rhetorical context of the two positions I have chosen at Google Inc. and the National Security Agency, and to outline the considerations I have made in writing the cover letters and résumés. The memo is organized into three sections—Audience Analysis, Job Descriptions, and Rhetorical Analysis. The Audience Analysis section discusses the companies offering the positions and the audience likely to be reading the materials. The Job Descriptions section describes the positions being applied to. And the Rhetorical Analysis section presents the adaptations I made in the application materials based on the rhetorical setting.

Audience Analysis

Google, Inc.

Google, Inc. is an internet search company based in Mountain View, California. Google is a publicly traded company whose primary source of income is from advertisements associated with its (primarily free) internet services. Google has grown a brand which is wildly popular on an international scale. Everyone knows what it means to “google” something. Google’s stated mission is “to organize the world’s information and make it universally accessible and useful,” and the company has created a collection of internet services which both accomplish that goal and create a highly profitable commercial platform. Google’s informal slogan is “Don’t be evil”, and the company is widely known for its fun, informal corporate culture.

Google employed 19,786 full-time employees as of June, 2009, so it is difficult to determine a specific person who would be reading job application materials. The position is a technical one at Google’s Mountain View facility, so the most likely reader would be a project leader at that location. Thus the audience will likely have significant technical background, and will be looking for applicants who are technically capable. Additionally, based on the corporate culture at Google, it may be important to convey creativity and an interesting personality in my application materials.

National Security Agency

The National Security Agency (NSA) is a government intelligence organization headquartered near Baltimore in Fort George G. Meade, Maryland. The NSA has two primary areas of activity: signals intelligence, and information system security. These areas require a wide variety of skills and resources, so the agency hires from many disciplines. The NSA

works extensively on sensitive projects related to military operations and national security, so employees must have security clearance.

Because the National Security Agency is one of the more secretive organizations in the public sector, it is impossible to find much information about who handles applications. The process likely involves screening of applications by a standardized method, followed by review by one or more mathematicians. Application materials should be aimed at an audience which is mathematically knowledgeable.

Job Descriptions

Google Inc., Software Engineer

Google's main business is providing internet search and services for users across the world. This requires maintenance of software applications of an impressive scale, especially Google's search engine, which handles hundreds of millions of queries per day. As a result of the great demands of running such an enormous operation, Google hires many software engineers to maintain and troubleshoot its services.

The job I am applying to at Google is exactly such a position. The main listed tasks involve monitoring, troubleshooting and maintaining the company's large-scale software applications. The job ad notes that a B.S. in computer science is required, but that an M.S. is preferred. I will have only the prior when applying, so I should emphasize my knowledge base rather than my degree.

The ad indicates a need for both theoretical knowledge and practical ability in computer science. Requirements include expertise in data structures, algorithms, and efficiency analysis, as well as a working knowledge of several standard programming languages. The ad also notes that familiarity with Linux and open source software is desirable. As the position is quite technical, I will want to emphasize that I have expertise in each of these areas.

National Security Agency, Mathematics Summer Employment Program

The National Security Agency's primary areas of activity are signals intelligence and information system security. Both of these areas require a large body of thorough logical analysis and rigorous mathematics. To satisfy these needs, the NSA employs more mathematicians than almost any other organization in the world.

The summer program that I am targeting introduces students at the college level to a career in mathematics at the NSA. The program requires that applicants are students of mathematics, that they are citizens of the United States, and that they are eligible for security clearance. The program description also calls for candidates that "possess imagination, initiative, and intellectual curiosity". Unfortunately, neither the requirements nor the character traits indicate concrete qualifications that the agency would like to see in application materials. The requirements would be too obvious to state on a resume, and the traits are somewhat broad and nondescript.

The program description does not list specific topics in mathematics that are required for the position, so much of the necessary knowledge can probably be learned during the program. However, candidates with broad general knowledge of mathematics are likely most desirable. It will be important for me to show in my résumé and cover letter that I am both talented and knowledgeable mathematically.

Rhetorical Analysis

The two positions I am applying for are in quite different disciplines and require quite different qualifications. As a result, the application materials for the two positions are significantly different, one application focusing on my computer science degree and the other focusing on my mathematics degree. Because of this fact, I believe that the important contrasts between the applications are easy to see, and I will focus here on how each application packet targets its respective position and organization.

Google, Inc. Application Materials

For the cover letter to Google, I tried to introduce my technical facility and personal creativity. The introductory paragraph is fairly typical, introducing my intent to apply for a position, and indirectly introducing the structure of the letter. The second paragraph focuses on my education and technical abilities, presenting in particular some of the requirements listed on the job ad. The fourth paragraph is a typical conclusion, mentioning my résumé, requesting an interview, and providing contact information.

The third paragraph requires some additional explanation, as it is somewhat non-conventional. If I had participated in any internships, co-ops or work experience related to a technology field, it would have made sense to present that here. However, I've been focusing more on mathematics as far as extracurricular programs are concerned, so I don't have any such experiences to discuss. Instead, I decided to discuss an independent programming project that I designed and implemented last summer. I think that this plays to the position quite well, as it demonstrates that I have a dynamic personality (I go out of my way to do independent projects) and that I am interested in open source software (the programming project was an extension to an open source program). Note that "Googler" is a phrase used on official Google websites to describe Google employees.

I designed the résumé as a skills résumé rather than a chronological one. As noted, this is because I do not have much work background as a software engineer, so it would be fruitless to try to sell myself using a chronological approach. The technical skills and education seem most important for this technical position, so I placed them directly following my objective statement. I noted my computer science degree before my mathematics degree and focused on technology-related skills because computer science is the primary discipline required by this position. The next section lists some independent projects I have worked on. As I noted regarding my cover letter, I feel that my independent work demonstrates personal characteristics that would be desirable at Google. As such, I decided that a separate section

was warranted for this list. The final section describes some non-technology work experience to show that I have succeeded in jobs in the past.

National Security Agency Application Materials

In my cover letter to the NSA, I aimed to present myself as a competent and knowledgeable student of mathematics. My introductory paragraph indicates my intent to apply, and also describes my purpose for applying: to determine what a career at the NSA would be like. My second paragraph describes my mathematical education, in terms of both fundamental topics and extensions. I note one of my specific mathematical interests here to show that I have initiative as a student. The third paragraph describes a research program I participated in previously. This is particularly relevant to this application, because the program likely focuses on research-like problem-solving activities. The concluding paragraph mentions my résumé and provides contact information. I don't know if applicants are interviewed for a program like this, so I didn't specifically request an interview in the letter.

I also designed this résumé as a skills résumé, because I have had only intermittent work experience related to mathematics. The education and skills sections come directly after the statement of purpose. They focus primarily on my mathematical ability and experience: my mathematics degree is listed first under education, and the skills section contains only mathematical skills. After this is the experience section, which is somewhat more extensive than in the Google application. This is because my work and research experience has been related to mathematics, so it is much more relevant in this application. Finally, I listed several activities and honors I've received which may further demonstrate that I am a competent student. I omitted a references section because the application calls for letters of recommendation which would take the place of references in the application process.

100 East College Avenue
Apartment # 1
State College, PA 16801

November 9, 2009

Google Inc.
1600 Amphitheatre Parkway
Mountain View, CA 94043

Dear Sir or Madam,

I would like to apply for employment at Google Inc. I learned from information at *google.com* that there is a position open for a Software Engineer at your Mountain View facility. Having looked at the listed requirements, I believe that my education and background qualify me for the position.

At the Pennsylvania State University, I have studied both practical and theoretical aspects of computers and technology. I am fluent in a variety of programming languages such as C, C++ and Java, and I have several years of experience working in a Linux environment. Additionally, I have studied program design, data structures, and algorithms, and as a student of mathematics I am well versed in rigorous proof of correctness and efficiency of programs. I believe that this combination of practical experience and theoretical knowledge would be of value to your company.

Beyond my schooling, I have worked on a number of personal technology projects on the side which seem to fit with the “Googler ethos” of individual innovation in a cooperative environment. Last Summer, I designed an extension to the open source text editor Emacs which allows the user to more easily customize the keyboard interface for specific documents. I have found the extension to be quite useful (I am currently using it to prepare this letter), and I plan to release it to the Emacs community in the near future.

The enclosed résumé contains more information about my qualifications for the position. Could we arrange for an interview, at your convenience? You can contact me any time at (814) 555-5555, or you can email me at *brg5000@psu.edu*.

Sincerely,

Bryan R. Gillespie

Enclosure

Bryan R. Gillespie

brg5000@psu.edu

School Address

100 East College Avenue
Apartment # 1
State College, PA 16801
(814) 555-5555

Permanent Address

100 South Atherton Street
State College, PA 16801
(814) 555-5555

OBJECTIVE

To obtain the Software Engineer position at Google Inc. in order to apply my skills in software design and analysis.

EDUCATION

2006 – Present	The Pennsylvania State University	University Park, PA
Bachelor of Science in Computer Science		
Bachelor of Science in Mathematics		
Schreyer Honors College		
Expected Graduation Date: December 2010		
GPA: 3.97 / 4.00		

SKILLS

- Programmed in C, C++, Java, Lisp, and MIPS machine code
- Designed and analyzed algorithms and data structures
- Worked extensively with Linux and Solaris command line interfaces
- Solved theoretical problems using techniques of mathematically rigorous proof

INDEPENDENT PROJECTS

- Implemented an extension to GNU Emacs allowing users to specify alternate input schemes
- Assembled a personal web server based on Linux and the Apache HTTP Server
- Designed an artificial intelligence agent to play the game Connect Four

EXPERIENCE

Fall, 2009	PSU Know How	State College, PA
<i>Tutor</i>		
• Helped Penn State students to understand material from undergraduate mathematics courses		
• Managed flexible working hours to fit clients' schedules		
Spring, 2008	The Pennsylvania State University	University Park, PA
<i>Grading Assistant</i>		
• Evaluated the correctness of mathematical proofs written by Penn State students		
• Provided constructive written feedback to students		
• Managed flexible working hours to meet weekly grading deadlines		

REFERENCES

References available on request.

100 East College Avenue
Apartment # 1
State College, PA 16801

November 9, 2009

National Security Agency
Attn: R1 (DSP/MSEP/GMP)
9800 Savage Road, Suite 6515
Ft. George G. Meade, MD 20755-6515

Dear Sir or Madam,

I would like to apply for the Mathematics Summer Employment Program (MSEP) at the National Security Agency. I am considering the NSA as a possible career as a professional mathematician, and I learned about this internship program from a representative at the 2009 Pennsylvania State University career fair. The program looks like an excellent opportunity to experience what a career at the NSA would entail, and I feel that my education and background qualify me for a position.

At the Pennsylvania State University, I have studied a breadth of fundamental topics in mathematics using techniques of rigorous proof. The undergraduate curriculum here has a particular focus on the rudiments of analysis and algebra, with five courses in analysis and two in algebra required for my option. I have also had the opportunity to study a broader range of materials related to my personal interests. I have found that I am particularly interested in areas which combine analytic and discrete techniques, and this has led me to study analytic number theory and enumerative combinatorics, as well as more advanced topics in analysis such as measure theory and functional analysis. I believe that the breadth of my education would allow me to quickly learn in depth the materials needed for the MSEP.

Additionally, I already have experience in a collaborative research setting. At the PSU 2007 Summer REU program, I studied a problem in dynamical systems with a fellow undergraduate student, under the guidance of a doctoral candidate. The program introduced me to the process of mathematical research: reading papers, trying many ideas unsuccessfully, eventually making a small amount of progress, and so on. This experience would be valuable in an applied research setting such as the MSEP.

The enclosed résumé contains more information about my qualifications for the program. If needed, you can contact me any time at (814) 555-5555, or you can email me at *brg5000@psu.edu*. Thank you for considering me for a position.

Sincerely,

Bryan R. Gillespie

Enclosure

Bryan R. Gillespie

brg5000@psu.edu

School Address

100 East College Avenue
Apartment # 1
State College, PA 16801
(814) 555-5555

Permanent Address

100 South Atherton Street
State College, PA 16801
(814) 555-5555

OBJECTIVE

To be admitted to the Mathematics Summer Employment Program at the National Security Agency in order to apply my mathematical skills and training for the good of the nation.

EDUCATION

2006 – Present	The Pennsylvania State University	University Park, PA
Bachelor of Science in Mathematics		
Bachelor of Science in Computer Science		
Schreyer Honors College		
Expected Graduation Date: December 2010		
GPA: 3.97 / 4.00		

SKILLS

- Topics of Study:
Abstract Algebra, Linear Algebra, Uncomputability Theory
Elementary and Analytic Number Theory, Numerical Analysis
Real and Complex Analysis, Probability and Measure Theory, Topology
- Applied techniques of mathematical proof to demonstrate the validity of complex theorems
- Conducted research on dynamical systems in collaboration with undergraduate and graduate students

EXPERIENCE

Fall, 2009	PSU Know How	State College, PA
<i>Tutor</i>		
<ul style="list-style-type: none">• Helped Penn State students to understand material from undergraduate mathematics courses• Managed flexible working hours to fit clients' schedules		
Spring, 2008	The Pennsylvania State University	University Park, PA
<i>Grading Assistant</i>		
<ul style="list-style-type: none">• Evaluated the correctness of mathematical proofs written by Penn State students• Provided constructive written feedback to students• Managed flexible working hours to meet weekly grading deadlines		
Summer, 2007	The Pennsylvania State University	University Park, PA
<i>Undergraduate Researcher</i>		
<ul style="list-style-type: none">• Engaged in mathematical research on topics in the field of dynamical systems• Collaborated with a fellow undergraduate researcher• Studied independently the mathematics necessary to approach the topics of research		

ACTIVITIES AND HONORS

- Participant, Penn State Mathematics Advanced Study Semesters Program, Fall 2007
- Recipient, Mathematics Advanced Study Semesters Performance Fellowship, 2007
- Recipient, Schreyer Academic Excellence Scholarship and Dean's List, 2006 – Present