April 22, 2019

To: Distinguished Professor Selection Committee

From: S.S. Iyengar, Director, School of Computing and Information Sciences

RE: Nomination of Dr. Naphtali Rishe

Dear Colleagues:

It is a privilege and honor for me to nominate and endorse Dr. Naphtali Rishe for the title of Distinguished University Professor at FIU.

Naphtali serves FIU since 1987 and became a full professor in 1994. In 2000 he was the first FIU faculty member to receive the honor of the Outstanding University Professor. As you will see below, he continues a truly outstanding performance through today and has brought immense international recognition to FIU.

1. Naphtali has been awarded 18 U.S. patents on database querying, semantic database performance, Internet data extraction, health informatics, and transportation. In October 2018 ceremony Dr. Rishe was recognized as the most prolific inventor, having been awarded 7 patents this year. Rishe’s patents in 2018 comprised more than ten percent of the output of the entire university faculty's productivity of in 2018 (66 in the Report to BOT for the entire year 2018). In the first quarter of 2019 Naphtali was already awarded three patents, thus in 2019 he might beat his own 2018 record.

2. Naphtali has authored 4 books. His latest book "Interaction Design for 3D User Interfaces" (CRC Press, 2016, Hardcover, 805 pages) is a transformative work on human-computer interfaces. His early books in 1988 and 1992 pioneered the transformation of the database discipline to semantic modeling – this was deemed esoteric at the time but twenty years later post-relational semantic databases have become mainstream as modern complex data problems can no longer be addressed via rigid relational database structures.

3. Naphtali has edited 6 books. His recent volume "Fifty Years of Fuzzy Logic and its Applications" (Springer, 2015) compiled chapters from the leaders of the field and is dedicated to “Recognizing the 50th anniversary of Florida International University — a peer of Fuzzy Logic”.

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4. Naphtali has **authored 430 papers** in journals and conference proceedings on Databases, Software Engineering, Geographic Information Systems, Internet, Human-Computer Interfaces, and Data Mining for Personalized Medicine.

His recent papers have received **four best paper awards**.

His early papers were pioneering in all aspects of semantic database management: theoretical foundations, system implementation, and application design methodologies.

His publications in early 2000\textsuperscript{th} were transformative in the field of geospatial data and were the subject of editorial articles in the *Science* and *Nature* journals, both about Naphtali’s geospatial technology.

Naphtali’s 2009 paper on MapReduce was the first paper stemming from NSF-sponsored research in this then-emerging paradigm of parallel data computing.

Naphtali’s recent papers on computational transportation and medical data mining for precision medicine are a major contribution to these presently emerging fields.

5. Naphtali’s work has been highly recognized by NSF. His work is featured on the covers of both latest (2014 and 2016) NSF *Compendia* of Technology Breakthroughs of Industry-University Cooperative Research Centers -- books published by NSF every few years to advise U.S. Congress and Public on the state of science and technology.

Furthermore, of the 53,000 NSF-funded projects in 2009, it chose 120, including Rishe’s, to describe as NSF’s 2009 accomplishments in the NSF annual report to Congress with its 2010 Budget Request.

6. Naphtali has been the P.I. of about **$50 million** in research grants awarded by Government and Industry.

Among Naphtali’s current grants is the highly selective NSF IIS-Large “Moving Objects Databases for Exploration of Virtual and Real Environments”, the FIU-led collaborative project with University of Illinois at Chicago, Northwestern, and Brown Universities (Naphtali is the overall consortium P.I. and the FIU P.I.)

7. Naphtali is an **outstanding mentor** for our graduate and undergraduate students, as well as a national leader in expanding the **diversity in computing**.
A recent example of that is the case of Shonda and Shalisha Witherspoon, research assistants of Dr. Rishe, who both graduated with the highest GPA in the College of Engineering and Computing for the Spring 2016 commencement: 3.95. Their scholarly excellence at FIU was reflected in TV interviews on NBC and CBS and on the cover of the FIU Fall 2016 Magazine [https://news.fiu.edu/magazine/archives/fiu-magazine-fall-2016/](https://news.fiu.edu/magazine/archives/fiu-magazine-fall-2016/).

In July 2017 the twins’ team won the IBM's BlueHack hackathon for Internet of Things TJBot Challenge. The twins continued to the FIU graduate school as Naphtali’s research assistants funded by his NSF research grants and, upon graduation with Master’s, were hired as Research Staff members at the IBM Watson Research Center, one of the world’s most prestigious and selective research organizations in computing.

8. Naphtali’s geospatial technology TerraFly has brought a major international visibility to FIU. It has been extensively covered by worldwide press, including the New York Times, USA Today, NPR, and FOX TV News.

Over a third of (37%) of Google-indexed FIU web pages pertain to Dr. Rishe's research, particularly his cake.fiu.edu and vn4.cs.fiu.edu subdomains, based on Google statistics retrieved on 2019-04-20:

- Keywords: site:fiu.edu  URL: http://google.com/search?q=site%3Afiu.edu Results: 1,030,000
- Keywords: site:vn4.cs.fiu.edu  URL: http://google.com/search?q=site%3Avn4.cs.fiu.edu Results: 157,000
- Keywords: site:cake.fiu.edu  URL: http://google.com/search?q=site%3Acake.fiu.edu Results: 228,000

As I travel to remote universities worldwide, colleagues often introduce themselves while mentioning that they are quite familiar with FIU due to its TerraFly Web Geospatial system.

9. Naphtali has pioneered Web-based geospatial technologies that only years later became available in major engines like Google Maps: pannable aerial imagery with precise street overlays, virtual "flight" over maps comprised of aerial and satellite imagery overlaid with geo-referenced data, rooftop geocoding, geospatial time-series.

10. In 2012 NSF entrusted and funded Naphtali to convene its first workshop as a think-tank for planning research challenges of the emerging field of Precision Medicine (then called “Personalized Medicine”).
This workshop, convened in Florence, attracted major researchers in the field. The workshop evolved into a series of international congresses, where Naphtali has played a leading role, convened in Paris, Prague, and Tel Aviv.

11. Naphtali has led the U.S. DOT project “Informed Traveler Program and Applications (ITPA)”. The final inspection report by the U.S. DOT-mandated independent inspectors produced on 4/27/2017 concludes with: "The ITPA software is an advanced traffic management package developed by Florida International University's HPDRC. The system is well engineered and the development of the software is exemplary. The final IV&V testing of the Phase A and B concluded that the ITPA Test Plan and the ITPA Test Procedure documents were sufficient to provide direction to the ITPA test team. It is our conclusion that the ITPA will provide customized, real-time, and predictive information to individual ITPA users, via their smart phones and by other means. This information includes the access of available parking spaces and access to multimodal and intermodal services in the "UniversityCity" region, which encompasses FIU's Modesto A. Maidique Campus and certain portions of the City of Sweetwater. Real-time parking occupancy in the UniversityCity's parking garages and parking lots is available. Real-time transit vehicle locations, routes, estimated times of arrival, and passenger load percentages are available to ITPA users. The system is also able to broadcast events and other information from service providers to smart-phone users and available dynamic message signs at bus stops and parking garages. The information should enable the individual user to make optimum route and mode choices and will also enable the service providers to manage individual traffic, transit and parking more effectively."

The software underwent final review and acceptance with high praise by U.S. DOT on 10/31/2018.

12. Naphtali is the Executive Director of the NSF Industry-University Cooperative Research Center for Advanced Knowledge Enablement at Florida International University, Florida Atlantic University, Dubna International University (Russia), and University of Greenwich (UK) (I/UCRC-CAKE), as well as Director of the Center’s FIU site.

Naphtali successfully undertook the challenge of NSF to expand I/UCRC centers to multiple international sites.

13. In 1994 Naphtali founded the High-Performance Database Research Center (HPDRC) and is superbly directing it. Naphtali immensely contributes to the School and the University by chairing or serving on many committees.
14. Naphtali’s recent **annual evaluations:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Research</th>
<th>Teaching</th>
<th>Other Instructional Efforts</th>
<th>Service</th>
<th>Administration</th>
<th>Overall Performance</th>
</tr>
</thead>
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<tr>
<td>2018</td>
<td>outstanding to phenomenal</td>
<td>Good to Very Good</td>
<td>outstanding</td>
<td>outstanding</td>
<td>outstanding</td>
<td>outstanding to phenomenal</td>
</tr>
<tr>
<td>2017</td>
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<td>very good to excellent</td>
<td>outstanding</td>
<td>outstanding</td>
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<tr>
<td>2016</td>
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<td>outstanding</td>
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<tr>
<td>2015</td>
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<tr>
<td>2014</td>
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<td>outstanding</td>
<td>outstanding</td>
<td>outstanding</td>
<td>excellent</td>
</tr>
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In short, **Dr. Rishe’s case is the strongest that I have seen in four decades of my career;** hence it has my strongest endorsement.

If you have any questions, please feel free to contact me at my email iyengar@cis.fiu.edu, or call me at (305) 348-4802.

Yours sincerely,

S.S. Iyengar, Ph.D.
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