English for Computer Networks

计算机网络专业英语

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内 容 简 介

  本书是面向计算机网络通信技术的专业英语教材,内容涵盖了当代与计算机网络相关的主要知识。书中系统组织了在计算机网络方面有代表性的文章,兼顾了专业知识的系统性和英文文体的多样性,经过分析和加工,对专业术语的英文表达及疑难的句子或语法现象进行了解释和注解,帮助读者深入理解英文专业文章,提高其使用专业文献的水平和效率。

  本书可以作为高等院校计算机科学与技术、网络工程、电子信息工程及电子商务等专业的"专业英语"教学用书,也可以作为计算机网络技术相关领域科技人员培训和自学的材料。

前　　言

本书是面向计算机网络技术和计算机通信技术的专业英语教材,从美、英等国家最新出版的教科书、报刊或网络上发表的科技文章中精选出在计算机网络方面有代表性的文章,兼顾了专业内容的系统性和英文文体的多样性,经过分析和加工,对专业术语的英文表达及疑难的句子或语法现象进行了翻译和注解。书中还通过练习进一步巩固所学的知识,帮助学生阅读和理解全文。

本书主要分为三大部分:基本知识介绍、网络技术体系和先进网络技术及应用,内容涵盖了当代与计算机网络相关的主要知识。每部分有四个单元,全书共12 个单元,单元内有正文、注释、文法学习、扩展阅读和单元练习五个模块。学习材料按三个层次组织:课文,专业英语文法(包括词法、句法、语法和翻译)和专业英语阅读材料(包括网络工程师可能遇到的各种文体)。

本书结合作者在国内外多年的工作经验,选取合适材料,构成从专业知识到英文内容都有系统覆盖的教材,以使学生能从各方面对在计算机网络方面有代表性的英文文章、文件和文体有充分认识。通过对专业术语的英文表达形式以及内涵的解释,对疑难的句子或语法现象的分析和注解,使学生能有选择地深入理解英文专业文章,提高使用专业文献的水平和效率。

在内容表达方面,本书特别注重两点:

① 正文选用比较权威、经典的文章,阅读材料则选用各种文体的资料,包括技术说明、网络工程师招聘说明、网络项目介绍和专栏文章等。

② 培养学生不依赖中文而理解英文的能力;对于一般的词汇尽量给出英文解释,而对于专业词汇则尽可能用简图解释。

本书可以作为高等院校计算机科学与技术、网络工程、电子信息工程及电子商务等网络相关专业的广大学生和教师的"专业英语"教学用书,还可以作为从事计

算机网络技术相关工作的科技人员的阅读材料。

　　本书由许勇任主编,负责书稿的大部分编写工作;马姝靓任副主编,负责部分章节和习题的组织整理。桂林电子科技大学"计算机网络"双语教学示范课的其他老师也提供了材料和各种帮助,在此一并致谢,同时感谢教育部教学质量工程建设项目和学校及学院各部门对本书的支持。

　　专业英语的教育在当今网络与通信技术高速发展的时代有特别重要的意义。本书在讲解基本知识的基础上,还介绍了许多较前沿并具有实践意义的知识。书中若有任何疏漏之处,恳请读者批评指正。

编　者
2011 年 12 月

目　　录

Part 1   Introduction

Unit 1.1

A. Introduction of EST(the English of Science and Technology)

Our *era* is the age of machines, electronics and computers. Only by obtaining a good knowledge of science, can we live successfully in modern society.

With the development of science and technology, scientists and engineers *strive* to exchange their ideas, discoveries and inventions, collect information and data, *interpret* concepts and theories, comment on the latest scientific advances and write reports based on experimental procedures, *etc*. The need increases day by day for scientists and engineers to have a swift, economical, efficient, *impersonal* and sometimes international means of communication.

EST is a cover term. When language teachers first used the phrase "EST", they were content to deal *superficial*ly with scientific *discourse*. Instead of investigating the *authentic* language of science, they relied on popularized *account*s of technical subjects as are found in *encyclopedia*s or books intended for general readers.

Lately, however, textbooks have been appearing that attempt to reflect the nature of the language actually used by scientists and the function it serves.

However some people still ignore the existence of EST altogether, while others are quite indifferent to it. They draw a simple formula like this: EST = General English Grammar Technical Words. They thought that they would be able to understand EST by simply knowing grammatical rules in addition to some technical words. Unfortunately, this judgment gives no fruitful *comprehension* about the nature of EST. They do not seem to be aware that EST presents linguistic varieties with its own characteristic *features*.

Since scientists and engineers try to be impersonal in narrating the natural phenomena and facts, their processes, properties and characteristics, EST must be evidently precise, *concise*, clear and restricted and includes many mathematical

equations, formulae, diagrams, tables, etc. Scientists also prefer some typical sentence patterns and a large number of technical and semi-technical terms which make EST different to a very wide extent from ordinary English.

Furthermore, we can categorize EST literature according to its form and content. There are spoken and written forms.

Like many other natural unscripted speeches, EST in spoken form or spoken EST for short has many features (hesitation, pauses, incomplete utterances, sudden changes of direction, encouraging noises from the listener and repetitions).

The words and phrases used are to some extent informal and *colloquial*. In addition to all these, spoken EST consists obviously of a number of technical and semi-technical terms.

You may find EST in spoken form when you listen to a lecture, a radio or watch television programme or a film on a scientific or technical subject. Sometimes you'll have the chance to hear people "speaking scientifically" face to face.

EST in written form is used in technical books, *journal*s or other kinds of written *passage*s. It is expressed in the most formal way, both in the choice of words and sentences, far more formal than spoken EST.

Notes

1. era *n*. 时代

– a fixed point of time, usually an epoch, from which a series of years is reckoned

– a period of time reckoned from some particular date or epoch; a succession of years dating from some important event

– a period of time in which a new order of things prevails; a signal stage of history; an epoch; Syn: Epoch; time; date; period; age

2. strive *v*. 努力

– attempt by employing effort (= endeavor)

3. interpret *v*. 阐释,翻译,解读……

– make sense of; assign a meaning to

– make sense of a language

– give an interpretation or explanation to

– restate (words) from one language into another language

– create an image or likeness of, in art

– give an interpretation or rendition of

4. etc. (etcetera)　*adv.* 等等

- and so forth，and so on

5. impersonal　*adj.* 客观的，中性的

- neutral，nonpersonal，nonsubjective，objective [im-not]

6. superficial　*adj.* 肤浅的，表面的

- involving a surface only；not deep or penetrating emotionally or intellectually；of little substance or significance

7. discourse

① *n.* 演说，讲义，论文

- extended verbal expression in speech or writing

- an extended communication (often interactive) dealing with some particular topic

- an address of a religious nature (usually delivered during a church service)

② *v.* 论说、宣扬或讲授某事物

- talk or hold forth formally about a topic

- carry on a conversation

- to consider or examine in speech or writing

8. authentic　*adj.* 可靠的，真实的

- genuine，reliable，trustworthy，trusty，unquestionable；authentication

9. account　　*n.* 说明，叙述，账户报告

- importance or value

- a record or narrative description of past events

- a statement of money owed for goods or services

- the act of informing by verbal report

- a statement of recent transactions and the resulting balance

- a formal contractual relationship established to provide for regular banking or brokerage or business services

- furnish a justifying analysis or explanation

- be the sole or primary factor in the existence，acquisition，supply，or disposal of something

10. encyclopedia　　*n.* 百科全书

11. comprehension　　*n.* 理解，理解力

- an ability to understand the meaning or importance of something (or the knowledge acquired as a result)

- the relation of comprising something

12. feature

① n. 特征,特性

- an article of merchandise that is displayed or advertised more than other articles

- the characteristics parts of a person's face: eyes, nose, mouth, chin

- a prominent aspect of something

- a special or prominent article in a newspaper or magazine

- the principal (full-length) film in a program at a movie theater

② v. 以……为特征

- have as a feature

13. concise   adj. 精炼的

- to express much in few words

14. colloquial   adj. 口语的

- pertaining to, or used in, conversation, esp. common and familiar conversation; conversational; hence, unstudied; informal

15. journal   n. 日记,学术期刊,(机械)轴颈

- a diary; daybook

- a periodical; a magazine

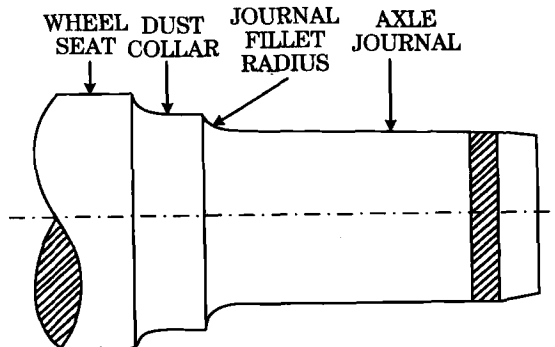- that portion of a rotating piece, as a shaft, axle, spindle, etc. which turns in a bearing or box(Fig. 1.1)

Fig. 1.1   Journal

16. passage   n. 通道,(文章的)一段;乐段,(时间的)流逝,航程,穿过;通行许可

- the act of passing from one state or place to the next

- a journey usually by ship

- the act of passing something to another person

- a bodily process of passing from one place or stage to another

- the passing of a law by a legislative body

　　- a way through or along which someone or something may pass
　　- a path or channel or duct through or along which something may pass
　　- a section of text; particularly a section of medium length
　　- a short section of a musical composition

B. 科技英语的特点：概述

　　科技英语(English for Science and Technology, EST)是英语的各种文体中的一种。它是随着科学技术的产生、发展而出现的,并且逐步地引起科学界和语言学界的关注和重视。现在许多国家设有科技英语研究中心,专门从事科技英语语言的研究。我国也分别在北京和上海设立了科技英语研究中心。国内外许多大学开设了科技英语这门课程,有的学校还专门设立了科技英语专业和系科。

　　科技英语大致可分为两大类：①科技专业文献,包括科技著述和论文,专业研究报告,实验报告和方案；各类科技情报和文字资料；仪器、仪表、机械、工具等的描述和操作说明书。②面向公众的有关科技文献资料,包括科普书籍,科普和科幻影视资料,科技发明、发现的介绍和报道等。

　　科技英语虽然已发展成为一种独立的文体而为人们所研究,但在语言的本质上,即构成语言的三大要素(语音、词汇和语法)上,与普通英语没什么区别,而且以自己的特色构成现代英语中最活跃的成分之一。

　　在词汇上,科技英语中有大量专业技术词汇和术语,但其基本词汇都是普通英语中固有的,一般的科技书刊中出现的绝大部分词汇都是普通词汇(通常称为半科技词汇)。即使在科技性极强的科技文章里,普通词汇的使用率也远远超过了专业词汇。

　　在语法上,科技英语虽然有明显的特点,如常用被动句式,句子结构复杂冗长、多名词化结构等,但都在英语语法规则范围之内,并没有构成新的语法规则,只不过是某些语法现象出现频率较高,从而形成了科技英语的特色。

　　科技英语的文体则有更多特点。人们的语言活动总是在特定的语境中进行的,语境的差异大量地反映在词汇上。词汇是语言的建筑材料,文体也就是语言风格。文体是一部分具有共同职业或兴趣的人为了实现一定的交际目的而使用的语言变体。科技文体就是自然科学家和社会技术人员从事专业活动时所使用的一种文体。日常所见到的科学著作、学术论文、实验报告、产品说明书、施工规范、贸易合同等都属于不同类别的科技文体。科技文体不以语言的艺术美为追求目标,而是讲求逻辑的条理清楚和叙述的准确严密。文体的特点通过特定的词汇构成和组合得以体现。

　　虽然目前英语是全球最流行的科学语言,世界上不同国家的许多科学家都需

要通过英语来获取或者发表科学研究成果,但实际上,在 17 世纪之前欧洲知识分子的通用语言还是拉丁文。到 17 世纪下半叶才开始出现英语写作的科学文章。例如,牛顿用拉丁文创作了被称为"Prineipia"的数学论文,但是后来关于光的性质的著作"Optiks"则是用英语发表的。据说在 18 世纪末期,有 401 种德语科技杂志,而相应的只有 96 种法语科技杂志和 50 种英语科技杂志。然而,到了 19 世纪,随着历史发展,英美国家在国际政治、经济和文化等领域扮演着越来越重要的角色,尤其是 20 世纪后半叶,美国在生物科技、信息科技、新材料技术等一系列领域的领先,促进了英语逐渐成为科技领域的世界通用语言。

科技英语着重于对客观事物的描述或者对逻辑概念的推理,因而在词汇、句法、语篇等方面有着与通用英语不同的自身特点,形成了独特的文体风格,可以归纳为词法、语法和文法三个方面。

(1)词法特征

第一,科技英语最基本的特征是大量使用技术词汇。为了概括社会和自然现象,揭示客观事物的发展规律,科技文体必须使用表义确切的专业术语。源自拉丁语和希腊语的词汇词义狭小明确,非常适合科技语域。例如:circumvent(阻止)、mechanical(机械的)、technology(技术)等。

第二,同一词语词义的多专业化,即同一个英语常用词不仅被多个专业采用,而且含义也各不相同。例如课文中的"journal",一般为"学术期刊",但是在机械工程中则为"轴颈"。比较典型的还有"order"一词,在日常英语指"命令、订购"等,在军事上指"队形",在计算机领域指"指令",在法律上指"法院的决议",在数学方面指"阶、次序",在建筑学上则指"柱型"。对于这一类词语,只有通过上下文和具体的语言环境才能确定其真正的含义,切忌望文生义。

第三,广泛使用缩略语。英文专业名词通常过长,所以常使用缩略法(shortening)。这类词语的主要构成方式有三种:①截短法(clipping),就是将词的部分截缩而构成新词。如 ad(广告) = advertisement,flu(流行性感冒) = influenza,maths(数学) = mathematics。②首字母缩写法(acronyms),即将词组中的每个词的首字母加在一起构成新词。这样的新词一般每个字母都要大写。如:WWW = World Wide Web(万维网),HDTV = High Definition Television(高清电视),CEO = Chief Executive Officer(执行总裁,首席执行官),CAM = Computer Aided Manufacturing(计算机辅助制造),DNA = Deoxyribonucleic Acid(脱氧核糖核酸)等。③从两个单词中抽出部分字母而构成新词,如 telegram + exchange = telex(电传),modulator + demodulator = modem(调制解调器)。

（2）语法特征

科技英语具有较多采用被动语态，大量使用名词化结构和非限定性动词，祈使句出现频率较高以及条件句运用较多等语法特征。

第一，被动语态的广泛使用。科技英语主要是描述客观现象、说明工艺过程等，无需指出行为的主体，使用被动句不仅没有主观色彩，还能使读者注意力集中在叙述的客体上。这类句子常译为无主语的主动句，或使用形式主语或泛指主语如大家、人们等。

第二，名词化倾向和非限定性动词的大量使用。这种结构和形式能够把原来的施动结构蕴藏在深层结构里，从而把更多的信息融于一体，使彼此的逻辑关系更严密、表达更精确，这符合科技英语追求语言表达简练、凝重、客观与浓缩的要求。

第三，有限的句型和时态运用。科技英语文体常用来陈述客观事实和问题，描写过程和状态，说明特性和功能。因此，在这样的文体中，谓语动词主要以一般时为主，常用的时态有一般现在时、一般过去时、一般将来时，有时也使用现在完成时。

（3）文法特征

第一，词汇和逻辑衔接。在科技英语文体中大量使用表示逻辑关系的词语和连接性词语。科技英语着重于客观地说明事物的特点和性能，或阐明某种观念、原理、现象等，因而具有准确性、严密性和客观性，在语篇形式上形成了特有的方式：频繁使用词汇衔接和逻辑连接。这些词语在叙述、归纳、论证和推理等方面能起到语义连贯的作用。例如表示原因的词：because, because of, as, as a result of, for, due to, owing to, caused by 等；表示逻辑顺序和顺理连接的词：so, thus, therefore, furthermore, in addition, in addition to, moreover 等。

第二，长句较多。为了表述一个复杂概念，使之逻辑严密、结构紧凑，同时节省篇幅，科技英语的文体中往往出现大量长句。这些句子由于有较多的修饰成分、并列成分、各种短语或从句，结构比较复杂。一般情况而言，学术性越强的文章，采用的句子越长。根据上海交通大学的计算机语料库统计，科技英语句子的平均长度为 21.4 个词，超过 40 个词的长句占 6.3%。

第三，语篇结构。科技文章一般由导言、正文和结论或结束语三部分组成。当然，语篇结构可以因陈述的内容、时间、场合、对象的不同而有所差异。

从科技英语的起源和发展可以看出，科技英语在其演变和发展过程中逐渐形成了自身特有的文体特征，其追求的是逻辑上的条理清楚和思维上的严谨周密。只有深入分析、掌握科技英语的文体特征，了解其与普通英语之间的文体差异，才能更好地运用科技英语。

C. Readings: The Internet

The Internet is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail.

Most traditional communications media including telephone, music, film, and television are reshaped or redefined by the Internet, giving birth to new services such as Voice over Internet Protocol (VoIP) and IPTV. Newspaper, book and other print publishing are adapting to Web site technology, or are reshaped into *blog*ging and *web feed*s. The Internet has enabled or accelerated new forms of human interactions through instant messaging, Internet *forum*s, and social networking. Online shopping has boomed both for major retail outlets and small *artisan*s and traders. Business-to-business and financial services on the Internet affect supply chains across entire industries.

The origins of the Internet reach back to research of the 1960s, *commission*ed by the United States government in collaboration with private commercial interests to build robust, fault-tolerant, and distributed computer networks. The funding of a new U.S. backbone by the National Science Foundation in the 1980s, as well as private funding for other commercial backbones, led to worldwide participation in the development of new networking technologies, and the merger of many networks. The commercialization of what was by the 1990s an international network resulted in its popularization and incorporation into virtually every aspect of modern human life. As of 2009, an estimated quarter of Earth's population used the services of the Internet.

The Internet has no centralized governance in either technological implementation or policies for access and usage; each constituent network sets its own standards. Only the overreaching definitions of the two principal name spaces in the Internet, the Internet Protocol address space and the Domain Name System, are directed by a maintainer organization, the Internet Corporation for Assigned

Names and Numbers（ICANN）. The technical underpinning and standardization of the core protocols（IPv4 and IPv6）is an activity of the Internet Engineering Task Force（IETF）, a non-profit organization of loosely **affiliate**d international participants that anyone may associate with by contributing technical **expertise**.

Notes

1. blog *n*. 博客

2. web feed

  – A web feed (or news feed) is a data format used for providing users with frequently updated content. Content distributors syndicate a web feed，thereby allowing users to *subscribe* to it. Making a collection of web feeds accessible in one spot is known as *aggregation*，which is performed by an aggregator. A web feed is also sometimes referred to as a syndicated feed.（web feeds 是一种新型的网络服务，web feeds 可以理解为是一种信息传输方式，主要解决了信息源的更新监测，信息源的集中处理和所有信息按照信息源的自动分类。web feeds 适合传输频繁更新、信息单元相对独立的信息，比如新闻站点、blog、电视节目单等。与 email、WWW、IM 这些信息传输方式相比，web feeds 有更高的信息处理效率，但是它主要被用来完成信息从信息源到用户的单向流动，用户的信息反馈到信息源虽也有标准和应用，但还没有普及。）

3. forum *n*. 论坛

  – a place of assembly for the people in ancient Greece（词源于此）

  – a public meeting or assembly for open discussion

4. artisan *n*. 工匠，商人

  – a skilled worker who practices some trade or handicraft

5. commission *n*. 委任，委托，代办，代理等

  – the act of granting authority to undertake certain functions

  – a task that has been assigned to a person or group

  – the act of committing a crime

  – an official document issued by a government and conferring on the recipient the rank of an officer in the armed forces(委任书)

  – a special group delegated to consider some matter；a group of representatives or delegates

  – a fee for services rendered based on a percentage of an amount received or collected or agreed to be paid (as distinguished from a salary)（代理费，佣金）

  – the state of being in good working order and ready for operation

  – put into commission；equip for service；of ships