



# Tech Tribune

IPR & IR Cell, SRIC, IIT Kharagpur  
Biannual Newsletter - Autumn 2018

## World Intellectual Property Day



Every year 26<sup>th</sup> April is celebrated as World Intellectual Property Day to learn about the role of intellectual property rights (patents, copyright, design, and trademark) in human life, to remember the inventors, and to encourage innovation and creativity. **“Powering change: Women in innovation and creativity”** is the theme for this year World IP day. It is to remember the brilliance, curiosity and courage of the women inventors and encourage them to innovate more in shaping the future. In our institute we have large number of women researchers including faculty members and research students. We have filed more than 600 IPs and around 62 IPs come from women faculty inventors. IPR & IR Cell of our institute recognizes and congratulates all the women inventors for their achievement and motivates them to press forward in the path of innovation. On the occasion of World IP day, IPR & IR Cell organizes a program in SRIC conference room to encourage all women inventors.

*"Life is not easy for any of us. But what of that? We must have perseverance and above all confidence in ourselves. We must believe that we are gifted for something and that this thing must be attained."* -Marie Curie (Nobel Prize in Physics and Chemistry)

**PIC, IPR & IR**

## Patent Basics

Technology means application of science. Technology can be expressed in the form of product and process, for e.g communication technology includes communication device and process. New Product or process having inventive step and capable of industrial application is considered as patentable invention. New means that it should be NOVEL and there is no prior art for it. Prior art means the invented product or process should not be available in the form of prior publication, prior knowledge, and prior working anywhere in the world. As per Indian Patent Law, Inventive step means a feature of an invention that involves technical advance as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art. Inventive step in Indian Patent system is determined by problem-solution approach. To determine obviousness is to find out whether the person, with ordinary skill in the art, would have come up with similar solution for the technical problem. Hence, it can be said that patent provides non-obvious technical solution or economic significance (cost reduction) that has capacity to be used in industry Patent is one form of Intellectual Property Rights as suggested by TRIPS (Trade Related Aspects of Intellectual Property Rights). Patent right is granted exclusively for a maximum period of 20 years after which it came under public domain.

**Prof. Tapas Kumar Bandyopadhyay**  
*Metallurgical & Materials Engineering*

**An interview with Prof. Rintu Banerjee**



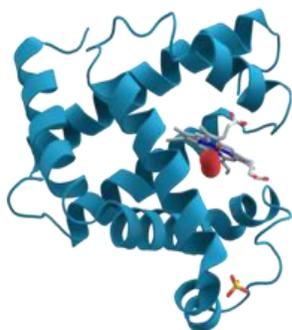
**Prof. Rintu Banerjee**, Department of Agricultural and Food Engineering, has made remarkable contributions in the fields of Food Biotechnology, Bioenergy, Enzymology &

its Biotechnological Applications and Protein Chemistry. As recently as in 2017, one of the technologies developed in her lab, namely, “Alpha amylase production by *Bacillus amyloliquefaciens*”, was transferred to the industry. In this interview, Prof. Banerjee discusses with us her overall experience (an inventor’s POV) with the technology transfer process from her laboratory and her views on the patenting process prevalent in India.

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**Can you please enlighten us with a brief description of your invention?**

Enzymes accelerate the rates of reactions which are very slow, by well over a million-fold, so reactions that would take years in the absence of catalysts can occur in fractions of seconds if catalyzed by the appropriate enzyme. An enzyme known as  $\alpha$ -Amylase is



extracted from a rod shaped bacteria called *Bacillus amyloliquefaciens*.

It produces  $\alpha$ -amylase in huge amount. This bacterial product can be of two types -

intracellular and extracellular. When it is secreted extracellularly, its purity is more after extraction as we don’t have to lyse the cells and hence there is no cell debris coming out. This  $\alpha$ -amylase is active on  $\alpha$ -1,4 glycosidic linkages.  $\alpha$ -Amylase is one of the important and widely exposed industrial biocatalyst that

has gained huge acclaim for its multifaceted applications. This invention addresses the critical challenge of producing the enzyme at a cheaper cost while maintaining its hyperactivity. The other desired properties should also be promising so as to compete with the existing enzymes produced by different strains from different origin.

**What is the novel aspect of this invention?**

The novel aspect of this enzyme is that it can be produced at cheaper cost, have very high enzyme titre and can drastically reduce the viscosity of any gelatinized starchy system. The enzyme bears immense potential for increasing the efficiency of cereals /grains based 1G ethanol production including some other promising industrial applications. Also the enzyme can be used in very minimal amount to carry forward the reaction.

**Have you commercialized this technology? If not, are you planning to contact industries to commercialize it?**

Yes, I have commercialized this technology to M/S. IFB Agro Industries Limited, Kolkata. But I didn’t approach them, they approached me. They got to know that my research area includes enzymology as well and so they contacted me and I decided to transfer the technology to industry.



**What is your message for young scientists/inventors?**

My message to the young scientists is that they should always file for a patent before publication and the patented technology should reach the industry through technology transfer. There are plenty of students who are

unaware of this and very few are using this opportunity.

**Can you share us your experience with IPR office in filing the patent and technology transfer?**

IPR office is always helpful in the process of filing the patent and transferring the technology. The online portal is much helpful in disclosing the invention.

*Interviewed by TTG students*

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## **Importance of protection of Geographical Indications in India**

India has a history of international trade and commerce with reputation of the indigenous products and services outstretching to far-away places. There are reliable evidences as to the export of printed fabrics to China even from 4<sup>th</sup> Century B.C. Since that time there has been a product-place link which assured to the customer a particular quality for products originating from a specific region. With the modern day flourishing of international trade, the demand for products from a particular geographical area, possessing certain unique qualities got accelerated. With the increased demands for such agricultural, handicraft as well as textile products originating from a specific geographical area, it become more important for the Governments to preserve the skills, the exquisite work and the revenue earning capacity of the artisans or farmers associated with unique products from respective geographical areas and conferring to them certain monopoly rights for commercial advantage.

The international legal regime for the protection of the ‘Indication of Sources’ or ‘Appellation of Origin’ has evolved from the Paris Convention For the Protection of Industrial Property 1883 and is now a well-recognized legal proposition especially

because of the incorporation of all intellectual property provisions into 1995 TRIPS Agreement of the WTO and World Intellectual Property Organization (WIPO) initiatives. The term ‘Geographical Indication’ (GI) is relatively a new terminology in the legal landscape of intellectual property law. It originated as a concept at the center of three highly debated subjects in international negotiations; intellectual property, international trade and agricultural policy. According to the World Intellectual Property Organization, “Geographical Indication is a sign used on goods that have a specific geographical origin and possesses certain unique qualities and reputation that are due to that origin.” In order to function as a Geographical Indication, a sign must identify a product as originating in a given geographical area. In addition to this, the qualities, characteristics as well as reputation of the product should be essentially due to some peculiar feature of that place of origin.

Geographical Indication (GI) acknowledges the unique and special relevance of the places, their natural factors which affect the quality of a product and their ancient links and cultural factors which give a special know-how to the crafts or skills. Though geographical indications fall under the domain of intellectual property (IP), it is different from other intellectual properties in the sense that most of the other intellectual properties are generally associated with private individuals coming up with a new creation whereas geographical indications are basically the collective rights assigned to producers of a unique product from a specific geographical region. Therefore monopolizing certain rights attributed to this form of intellectual property is beneficial to the interests of a larger community compared to other conventional intellectual properties.

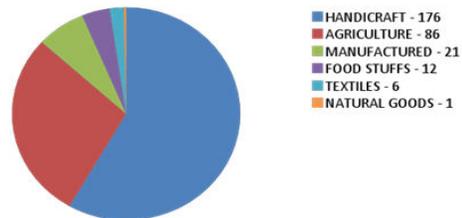
Geographical indications as a recognized form of intellectual property got its modern day acceptance through the

provisions of the TRIPS agreement. Section 3 under Part II of the TRIPS agreement comprised of Articles 22, 23 and 24 deals exclusively of Geographical Indications. However, the Agreement did not provide for a comprehensive institutional or legal framework of protection, but only laid down the minimum standards required to be followed. India also came forward with a national legislation namely ‘Geographical Indications of Goods (Registration and Protection) Act 1999’ and also the corresponding Rules of 2002 in compliance with the country’s obligations under the TRIPS agreement. The statute of 1999 gives enhanced protection to GIs other than wines and spirits also so as to address the interests of the developing economy and socio-political conditions of the nation. The Act which was a result of the widely felt need to protect Geographical Indications in India is administered by the Controller General of Patents, Designs and Trademarks, who is also the Registrar of Geographical Indications. The most significant contribution of the Indian Act was the establishment of the Geographical Indications Registry which enables the right holders to register their products as GIs. The Act provides registration in two parts – Part A is related to the registration of Geographical Indications; Part B relates to the registration of authorized users/Proprietors such as names, addresses and descriptions. The registry permits registration of GIs from outside India also. The Tea Board of India, a statutory agency of the Government of India was granted the first ever GI certification in India on 29/10/2004 for their famous product ‘DARJEELING TEA’. The basic purposes of Geographical Indication of Goods (Registration and Protection) Act 1999 are prevention of unauthorized use of registered GI’s by others, boosting export of registered Indian GI’s, promoting economic prosperity of producers and also extended protection in WTO member Countries.

As per the Geographical Indications of Goods (Registration and Protection) Act 1999, GI protection is basically available to agricultural, natural or manufactured goods or any goods of handicraft or of industry and certain food stuffs. As of October 2017, a total of 302 Geographical Indications are registered in India. Statistics suggests that most of the Geographical Indications in India are from handicraft industry and agriculture which together contributes 81.87% of the total registered GIs in India. (FIG.1)

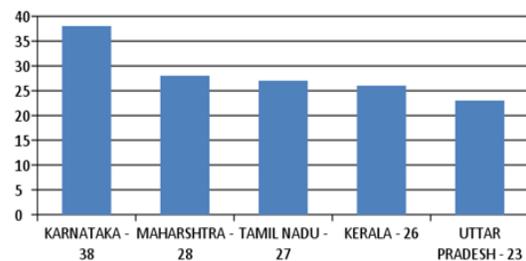
FIG.1 (OCTOBER 2017)

**SECTORIAL DISTRIBUTION OF GIs IN INDIA**



The State of Karnataka has the most number of GI registrations in India followed by Maharashtra. South Indian States like Karnataka, Andhra Pradesh, Tamil Nadu, Kerala and Telangana are very active in registering GIs whereas North Eastern States in India are still lagging behind registration of potential GIs capable of generating higher

**STATE-WISE DISTRIBUTION OF GIs in INDIA**



revenue to the producers. Six Indian states contributes to about half of the total GI registrations in India. (FIG.2)

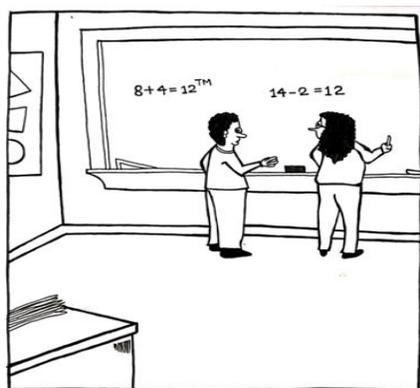
Due to the diverse agro-climatic conditions and lucrative history of traditional knowledge relating to handicraft and textile industry, India have a large variety of cultivators, artisans and skilled workers with special attributes, distinct from other countries or regions. This can offer one valuable competitive advantage that is difficult to erode since it is not as dependent on common factors of production such as labour and capital. However, the reality is that, India is still in the nascent stages of developing an effective implementation mechanism for GI protection. The richness and diversity of Indian GIs needs to be protected both at the international level and also at the domestic level and more importantly requires a stronger mechanism for access to benefit sharing which ensures that the actual producers of the products get the highest financial benefit.

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*Prof. K. D. Raju, RGSOIPL*  
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**Ease of filing patents: IP Portal, IIT Kharagpur**



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**Is Intellectual Property as Complex as it seems to be?**



<b>IP Profile (2017-2018)</b>	
<b>Patent applications received for filing:</b>	<b>59</b>
<b>Patents approved for filing:</b>	<b>56</b>
<b>Patents filed:</b>	<b>48</b>
<b>Pending with attorney for filing:</b>	<b>12</b>
<b>Patents/design/copyright granted:</b>	<b>17</b>
	<b>Patents: Indian: 9; Foreign: 2</b>
	<b>Design: 1; Copyright: 5</b>
<b>Patents filing by women faculty:</b>	<b>8</b>
<b>UG Students' invention:</b>	<b>1</b>
<b>Technology Transfer:</b>	<b>1</b>
<b>Department wise patent distribution (Filed only)</b>	
<b>Agricultural and Food :</b>	<b>6 + (1)</b>
<b>Aerospace :</b>	<b>1 +(1)</b>
<b>ATDC:</b>	<b>(2)</b>
<b>Chemical:</b>	<b>6</b>
<b>Chemistry Science:</b>	<b>2</b>
<b>SIT &amp; Computer:</b>	<b>2 + (2)</b>
<b>Electrical:</b>	<b>6 + (2)</b>
<b>Electronics:</b>	<b>6 + (3)</b>
<b>GSSST:</b>	<b>1 + (2)</b>
<b>SMST:</b>	<b>6 + (1)</b>
<b>Mechanical:</b>	<b>2 + (1)</b>
<b>Materials Science:</b>	<b>(1)</b>
<b>Physics:</b>	<b>1</b>
<b>RTC:</b>	<b>1</b>
<small>*Number shown in parenthesis is the joint IP (with other department)</small>	

**IPR Workshop - February, 2018**

The latest IPR workshop was conducted in IIT Kharagpur on 3rd February 2018, with distinguished patent advocate *Mr. Naren Thapetta* as the special guest speaker. In an interactive four hour seminar split into two halves, Mr. Thapetta talked about the various facets of software patenting, including the history of the governing laws and their development over time. He drew comparisons between the existing patent laws in India and in the USA, and through an argument - counter - argumentative approach made the case for software patents within well-defined boundaries. He further emphasized on the role of the claims as being central to the value of the patents, and through the citation of several real-world examples drew home the idea of the importance of the claim structure.

Some of the major points mentioned in the first half of the session are given next.

There are, right now 70% engineers but only 30% of advocates have knowledge of patents. Hence there is a requirement of more advocates with knowledge of Patents. Traditionally patents were viewed as a means to share the knowledge but the modern view is to focus on transaction cost for ensuring that innovation reaches the people. There are clauses that support the non-requirement of patenting software. The clauses included that software have unclear boundaries and they do not require patenting for growth. In India Patent Act (1970), it is mentioned that a mathematical or business method or a computer programme per se or algorithms are not inventions. The term “computer programme per se” introduces many confusions to people, and it can be interpreted as that no computer program is patentable. In Second amendment bill (1999), the following was stated: “In the new proposed clause the words “per se” have been inserted. This change has been proposed because sometimes the computer programme may include certain other things, ancillary thereto or developed thereon. The intention here is not to reject them for grant of patent if they are inventions. However, the computer programmes as such are not intended to be granted patent. This amendment has been proposed to clarify the purpose.”



This session was followed by a short tea break.

While the first half of the patent workshop focused on why patents are necessary and what are the difficulties faced in patenting algorithms or software in general the second half mainly focused on what the patent should include and more on the paperwork that goes into filing a patent. He started off by giving an insight into the content of a patent application which includes claims and description of Supporting Claims. He further went on to give an elaborate description of claims and supporting claims. In short, Claims define the scope of protection and there is a requirement of mapping onto the description of the patent and it should not map onto ‘prior art’. He then went onto scope and structure of Claims giving a clear cut distinction on Dependent vs Independent Claims, where

Dependent claims deemed to include features of independent/base claims. Dependencies define a tree for each independent claim and that the scope is broader for independent claims but the validity is also less for the same. He again explained the same with the help of the Pencil Claim example and gave the approach to draft claims. The talk then shifted to the topics of prosecution to establish boundaries, subject matter eligibility and obviousness where he gave the difference between the procedures followed by the Indian and US governments in terms of patenting where he showed that getting a patent filed in US is a much more tedious task as compared to India. Obviousness was explained as to be patentable if the improvement or the combination must produce a new result, or a new article, or a better or cheaper article than before and must not be an obvious or natural suggestion to what was previously known. He ended the lecture by giving a vivid idea of the written description and compulsory licensing, the written description includes describing the invention and its operation or use and the method by which it is to be performed. It should disclose the best method of performing the invention which is known to the applicant and for which he is entitled to claim protection and it should end with a claim or claims defining the scope of the invention for which protection is claimed. A compulsory license provides that the owner of a patent or copyright licenses the use of their rights against payment either set by law or determined through some form of adjudication or arbitration. In essence, under a compulsory license, an individual or company seeking to use another’s intellectual property can do so without seeking the rights holder’s consent, and pays the rights holder a set fee for the license. India Patents Act: Section 83, Patents Act 1970, Section 90 were used to explain compulsory licensing and lay down the terms and conditions for the same. The seminar was followed by a panel discussion, where a panel consisting of the guest speaker Mr. Naren Thapetta along with Prof. Padmavati, Prof. Matilal and Prof. TK Bandyopadhyay from RGSO IPL and Prof. CR Raj, PIC, IPR and IR Cell, and Prof. Goutam Saha, MHRD IPR Chair Professor, IIT Kharagpur encouraged and discussed upon queries from members of the audience. The discussion witnessed enthusiastic participation from the audience.



## *IIT Kgp technology in the News...*

### **IIT-Kharagpur technology to monitor patients in ambulances**

*June 3, 2017, The Times of India*

KHARAGPUR: Imagine doctors monitoring a critical patient even before he reaches hospital. A technology developed by IIT-Kharagpur is about to achieve just that. The institute has devised a life saver technology that can be fitted in an ambulance to ensure remote monitoring of patients by the doctors even before they have reached the hospital.

'AmbuSens' has been developed in the SWAN lab of the department of computer science and engineering (CSE) at IIT-Kharagpur. It is capable of wireless monitoring of various physiological parameters like ECG, heart rate, temperature and blood pressure.

"There is no such technology at present that can help doctors at the hospital to continuously monitor the condition of the patient when the latter is on the move. This technology will be a boon for referral patients who are transported from a hospital in a remote area to one in the city. In such situations at present, apart from family members, a medical technician accompanies a critical patient in an ambulance. But this technician has limited knowledge. With doctors being able to monitor the patients in transit, they can suggest medical interventions to the technician. This can be lifesaving," said the principal investigator for developing this system Prof Sudip Misra, department of CSE, IIT-Kharagpur.

### **IIT-Kgp develops technology for safer driving in rain**

*September 1, 2017, millenniumpost.in*

Kolkata: IIT-Kharagpur researchers have developed a visual technology that enables safer driving during rain, a statement said on Friday. The technology developed by researchers from the Department of Electronics and Electrical Communications removes from real-time video the obscuring effects of rain and displays it on the windscreen of vehicles to increase the clarity of driver's view. The 'Real-time Rain Removal from Videos' is a proprietary algorithm that has an advantage for Driver-Assistance Systems (DAS) that use video information to impart traffic-related information. "It is envisioned to be

used to enhance the safety of air, rail, ship and auto transportation by providing on-screen visualization of clear videos in rainy conditions. The visual acuity of rainy videos captured by surveillance cameras can also be enhanced by this algorithm," said lead researcher Sudipta Mukhopadhyay, faculty member at IIT-Kharagpur. It is also able to distinguish moving objects from the rain regions in the video, explained researcher Abhishek Kumar Tripathi.

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**Technology Transfer Group (TTG)** is a group of energetic students promoting, protecting the research, sowing the seeds of research culture in the campus and parallelly also acting as the "Industry-Academic" link.

This 9 year old group which is the official student body under SRIC is working parallel with the institute in the promotion and protection of intellectual property. Activities of these enthusiasts starts almost from the ground level including help for the researchers to choose domains from patent potential areas, law resources for the patent creation and finally to the creation of patent. Apart from research these people are publicizing the patented research through their blog which was started on the institute's foundation day Aug-18th 2014 with the name TTG IIT KGP. This blog along with its sister blog "IP and IR cell IIT KGP" have more than 25 articles related to patented technologies, statistics of patents among various departments, surveys and others. In order to create awareness and spread the importance of Intellectual Property Rights from grass root level, the Group decided to conduct Department Seminars. This helped students willing to opt for research to have an interaction with professors and gain insight about the same.

Also, last year in the month of April, IIT Kharagpur was awarded Prize for 'Top Academic Institute for Patents 2016' by Government of India. This was mainly because of the "100 Patents in 100 days Drive". The Director of our institute, Dr. P. P. Chakrabarti congratulated the group and the institute for this achievement.

Technology Transfer Group is headed by The Dean of SRIC, Dr. Pallab Dasgupta, and functions under the guidance of Prof. C.R. Raj, PIC, IPR & IR. The Group acknowledges them heartily for their constant support and motivation.

## List of granted patents, copyrights and design (2017-2018)

S.No	Name of the inventors	Department	Patent No Country	Title of the invention
1	Sudipta Mukhopadhyay, Abhishek Kumar Tripathi	Electronics	11805959.1 Europe	Method And Apparatus For Detection And Removal Of Rain From Videos Using Temporal And Spatiotemporal Properties
2	Manjunatha Mahadevappa, Jayanta Mukhopadhyay, Bhatlawande Shripad Subhashrao	SMST, CSE	2012317177 Australia	Venucane - An Electronic Travel Aid for Visually Impaired and Blind People
3	Rintu Banerjee, Paramita Mahapatra, Annapurna Kumari, G Vijay Kumar	Agricultural and Food	291288 India	Enzymatic Transesterification of Jatropha Oil
4	Jayanta Mukhopadhyay, Saswat Chakrabarti, Koel Chaudhury, Dharitri Goswami	Computer Science	287615 India	A Two-Pulse Synthesis (Tps) Based Method And System for DVP Signal Analysis
5	Shyamal Kumar Pabi Sudipto Ghosh, Madan Mohan Ghosh	Metallurgy	284469 India	Stable Dispersion of Surface Capped Silver Nanopowder in Hydrophilic Medium with Enhanced Thermal Conductivity
6	Sirshendu De, Jayanta Kumar Basu, Sunando Dasgupta	Chemical	285778 India	Modified Laterite Arsenic Adsorbent for Removing Arsenic Species and its Manner of Manufacture
7	H Das Jatindra Kumar Sahu, S K Khandelwal, Kaushik Khamrui	Agricultural and Food	285047 India	A Process for Continuous Production of Chhana
8	C Retna Raj, Bikash Kumar Jena	Chemistry	284016 India	Metal Nanoparticle Based Sensors for Hydrogen Peroxide, Uric Acid and Cholesterol and the Preparation Thereof
9	Aurobinda Routray, Amiya Ranjan Mohanty	Electrical	288510 India	An Electromagnetic Device based system for Fault Detection and Identification in Rotating Mechanical Components
10	Swapna Banerjee; Pralay Mandal; Shib Shankar Das	Electronics & ECE	294278 India	Non-Invasive Photo-Acoustic Electronic Apparatus Adaptable To Measure The Concentration of Body Fluid Components
11	Tarun Kanti Bhattacharyya; Tapas Kumar Maiti; Gobind	Electronic	294403 India	Novel Diamond Like Nanocomposite (Diamas) Material Used for Biocompatible Coating Application

	Singh Bisht; Debasish Mishra			
12	Sirshendu De; C S Pawan Kumar	Chemical Engineering; Mechanical Engineering	290893 Design India	Portable Affordable Water Purification Kit (PAWPK)
13	Sanjoy Pratihar; Jayanta Mukhopadhyay; Shamik Sural; Partha Bhowmick	Computer	SW-9757/2017	Skew correction of document images with Indian script
14	Goutam Saha; A Kishore Kumar;	Software	SW-9458/2017	Intellectual Property Development as a Service (IPDaaS)
15	Pranabendu Gangopadhyay; TAPAS GHOSH	Software	SW-9451/2017	Simultaneous Extraction of Mode Index and Absolute Refractive Index Profiles of Single-Mode Integrated-Optic Waveguide from its Near-Field Intensity Distributions (SMRI)
16	N S Raghuwanshi; Damodhara Rao Mailapalli; Sayon Dutta; Akash Mishra	Computer	SW-9062/2017	Mobile Irrigation Scheduler (MIS)
17	Sanjoy Pratihar; Jayanta Mukhopadhyay; Shamik Sural; Partha Bhowmick	Computer Science And Engineering; School Of Information Technology	SW-9756/2017	Removal of hand-drawn annotation lines from document images